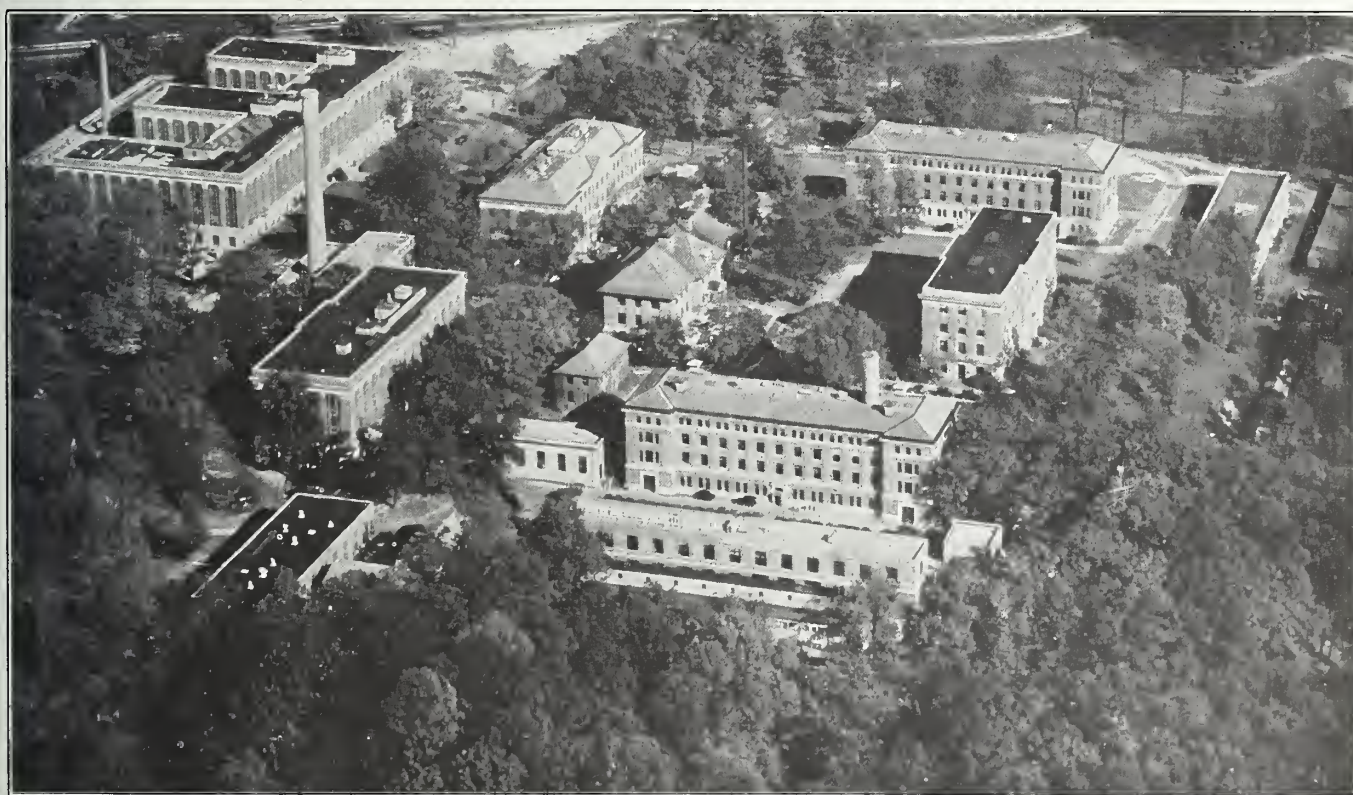


COMMERCIAL STANDARDS MONTHLY



*A Review of Progress in
Commercial Standardization and Simplification*



AIRPLANE VIEW OF BUREAU OF STANDARDS

ISSUED BY THE BUREAU OF STANDARDS OF THE UNITED
STATES DEPARTMENT OF COMMERCE, WASHINGTON, D. C., U. S. A.

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NOVEMBER, 1931

The Commercial Standardization Group

DIVISION OF SIMPLIFIED PRACTICE

Edwin W. Ely

The division of simplified practice cooperates with industrial and commercial groups to reduce waste, usually through eliminating unnecessary variety of product, method, or practice. Its function is to bring together all parties interested in a project of this character, and to coordinate their work in developing a simplified practice recommendation. Such work includes surveys of current practice, formulation of a simplified practice program, and presentation of that program for action by a general conference representing all interests. The division then transmits to all concerned a full report of the general conference, with a request for written acceptance of the action taken. When the volume of acceptances is sufficient to indicate initial success, the Department of Commerce indorses the program and publishes the recommendation. The division thereafter cooperates with a standing committee appointed by the industry concerned, in conducting periodic surveys to determine the degree of adherence, to maintain and extend support of the recommendation, and to secure data for reaffirmation or revision. Simplified practice may be applied to any commodity or activity in which it will reduce waste. The division stands ready to render service in developing and making effective any application of simplified practice which will reduce waste, stabilize business, or extend commerce.

BUILDING AND HOUSING DIVISION

J. S. Taylor

The division of building and housing, formed in 1921, cooperates with business, technical, and professional groups in furthering construction activities. It works to modernize building codes and to encourage improved standards for the quality of building construction, and the practical application of the latest development in design and use of building materials.

It encourages home ownership through the development of an enlarged, steadier, more intelligent, and more discriminating demand for dwellings—the largest single class of buildings which the construction industries provide.

The division also cooperates with other governmental agencies and with many private business and professional groups in efforts to distribute building activity more evenly throughout the year and to secure less fluctuation from year to year.

The work on city planning and zoning has the broad objective of making buildings more useful through proper location with respect to other structures, stabilizing of land values and property uses, well coordinated thoroughfare systems, and well laid out public works.

DIVISION OF SPECIFICATIONS

A. S. McAllister

The duties of the division of specifications are to promote and facilitate the use and unification of specifications. In doing so it carries on activities involving cooperation with technical societies; trade associations; Federal, State, and municipal Government specifications making and using agencies; producers, distributors, and consumers; and testing and research laboratories. It ascertains the Standardization and specifications promoting activities of the associations and societies, and brings to their attention the work being done by the commercial standardization group. It brings the Federal specifications and commercial standards to the attention of the maximum number of producers and users of commodities complying with these standards and specifications. It compiles and distributes lists of sources of supply of materials guaranteed to comply with the standards and specifications. It shows both buyers and sellers the benefits from handling nationally specified, certified, and labeled commodities. The division prepares directories of governmental and nongovernmental testing laboratories and the Directory of Specifications, and is working on an encyclopedia of specifications, the first two volumes of which have been issued, namely, "Standards and Specifications in the Wood-Using Industries" and "Standards and Specifications for Non-metallic Minerals and their Products." It also aids in preparing the Standards Yearbook.

STANDARDIZATION
..IS..
A CONTINUING PROCESS
~
ITS AIM IS NOT FIXITY
OR STAGNATION
..BUT..
TO ADD SERVICEABILITY
AS OFTEN AS THE
POTENTIAL GAIN
MAKES IT WORTH WHILE

DIVISION OF TRADE STANDARDS

I. J. Fairchild

The division of trade standards, on request, assists industrial and commercial groups in the voluntary establishment of standards covering grades, quality, dimensional interchangeability, or other acceptance criteria as a national basis for marketing manufactured commodities.

The detail criteria are selected or determined voluntarily by interested buyers or sellers, without any Government dictation or domination, and adjusted at a general conference of producers, distributors, and users so as to represent the composite views of all branches. The division functions chiefly as a neutral agency to see that all interested elements are given full opportunity to be heard and satisfied; to solicit and record acceptances; and to publish and promulgate the standard when a satisfactory majority of acceptances is obtained and provided there is no active opposition.

Industries are encouraged to apply self-certifying labels to products meeting the commercial standard requirements, as a means of protecting the consumer and the scrupulous seller from misrepresentation or unfair methods of marketing.

Provision is made for regular revision of the standard through the appointment of a standing committee to consider periodically any necessity for revision of the standard, in order that it may be kept constantly compatible with progress in the industry.

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AN INVITATION TO VISIT THE BUREAU OF STANDARDS

A cordial invitation is extended to all interested in scientific progress to visit the laboratories of the Bureau of Standards when in Washington. A personally conducted trip is organized at 2.15 p. m. daily except on holidays. Special trips for groups may be arranged at other times by writing to the bureau in advance. The bureau's illustrated Visitor's Manual may be had for the asking. This lists the work in progress and gives an airplane view of the ensemble and a brief statement of typical discoveries and inventions which have been notable, basic contributions to radio, aviation, and other modern arts and industries.



SAMUEL WESLEY STRATTON

1861 - 1931



Director, Bureau of Standards

1901 - 1923



Member, Visiting Committee, Bureau of Standards

1923 - 1931

A TRIP THROUGH THE BUREAU OF STANDARDS

"The Visitor" Writes of His Experience in This Extensive Group of Laboratories

By H. G. BOUTELL, *Bureau of Standards*

A pleasant ride along Connecticut Avenue north of Rock Creek Bridge takes one from the center of the city to Upton Street, the entrance to the grounds of the Bureau of Standards. The visitor is at once surprised to find an institution consisting of a group of laboratory buildings arranged like a university, situated on a natural hill amidst beautiful country surroundings. The glimpses of specimens of material under exposure tests alone give outward signs of the scientific work that is being carried on, much of it by night as well as by day.

The visitor is directed to the administrative offices in the South Building, and after a few minutes' talk about the bureau and its functions accompanies a member of the staff on a general trip through the laboratories.

"This is an unusual location for a Government bureau, far from the business section of the city," the visitor remarks. "It would be for most Government offices, but not for a plant of this kind. We had to get away from electrical and mechanical disturbances, which seriously interfere with precise measurements. Also, the ground we needed was easier to secure and cheaper than that in the built-up district. However, even now some of our precise work has to be performed at night, when the elevators, street cars, and other heavy vehicles are not in operation."

"The bureau deals with five classes of standards, standards of measurement, standard numerical constants, standards of performance, standards of quality, and standards of practice. In this vault on the first floor of the South Building are kept the fundamental standards of measurement—the meter and kilogram. These were supplied to our Government by the International Bureau of Weights and Measures at Paris. All measurement work is really referred back to these two basic standards and the standard unit of time.

"Is a material standard of length such as this absolutely constant?" the visitor asks. "No; that is sometimes a difficulty. All such length standards change with temperature and may change with time, even if only a very little—negligibly it may seem to most of us. But even a millionth of an inch can no longer be ignored. We hope eventually to adopt a certain wave length of light as our standard of length. Then, if all material standards of length were destroyed, we could easily carry on."

"Here in this adjoining room is a device set up to show you that a massive 5-inch steel bar supported at the ends bends measurably under the pressure of your finger. In the eyepiece here you see those rings en-

large as you press down. Those are shadow lines (interference bands) caused by the interfering light waves. By measuring their movement we can tell how much the bar is bent. You didn't believe you could bend a 5-inch bar? Well, you can see it bending under your touch if you have an instrument delicate enough to show the motion, perhaps a few millionths of an inch. Using light waves directly we have ruled here the most accurate scales in the world.

"In this other room we have a series of precision balances for comparing very accurate weights for precise weighings. We compare two weights of about 2 pounds each with an error of only one fifty-millionth of a pound. For such fine work the operator must

stand at a distance from the balance so that the heat of his body will not affect the test. These rods are used to control the mechanism, and the telescope to take the readings.

"In the basement of this building is a tile lined tunnel laboratory 165 feet long for comparing the base line measuring tapes for our national sur-

veys and certifying other standard tapes in terms of our national standard of length.

"The West Building, which is one of the four that surround the 'campus' on the hill, houses several lines of work. On the top floor we have the polariscopic testing of sugar; on the other floors work in connection with heat and temperature measurements. These rectangular pieces are specimens of typical insulating materials, such as are used in refrigerators and buildings, and we are investigating the heat transfer through them. In other words, the bureau is measuring their efficiency in keeping out the cold in winter and heat in summer.

"This peculiar looking set-up in the basement is an apparatus for testing elevator interlocks. Approximately 75 per cent of the elevator accidents fatal to the public can be prevented by using a satisfactory interlock, and on the basis of our work a safety code has been prepared which specifies what a satisfactory interlock should do."

"Is the bureau carrying on this work for any special industry or manufacturer?"

"No; of course, many industries will profit from it, but the work was taken up originally for a certain municipality in connection with the preparation of an elevator safety code.

"In this noisy room next door we are investigating the fatigue resistance of duralumin, the alloy used in the construction of aircraft. These rectangular specimens of the metal are supported entirely on films of

Visitors are always welcomed at the Bureau of Standards. However, many readers of the *COMMERCIAL STANDARDS MONTHLY* are unable to visit the bureau in person. With this thought in mind the author accompanied a group of visitors through the bureau, and here presents his observations for the readers of the magazine unable to make the trip in person.

air and are made to vibrate at a rate of 200 or 300 cycles per second by a high speed air stream.

"We are now in the Low Temperature Building, where another line of work is carried out by the heat and power division. This large steam-driven compressor takes ordinary air and compresses it to about 3,000 pounds per square inch. It is then cooled and allowed to pass through a long coil of copper tubing. As it escapes from a valve at the bottom of the coil it expands, and in doing so it takes up heat from the coil. In other words, the air cools itself until some of it is cool enough to liquefy."

"What is the temperature of the liquid?"

"Three hundred and ten degrees below zero Fahrenheit, but we have produced liquid helium in this laboratory at a temperature of -456° F., only 3.4° above the absolute zero.

"In this brick building and the smaller ones near it we carry out experiments on internal-combustion engines and appurtenances. We can mount an airplane engine in this concrete chamber, and then by pumping out the exhaust gas and air we can lower the pressure to that corresponding with any desired altitude up to about 30,000 feet. We can also cool the air by a refrigerating plant to a temperature of -40° or even lower, and in this way duplicate the conditions of an actual flight.

"Here we are testing automobile brake linings. We developed this standard testing equipment several years ago. Similar apparatus has been installed by manufacturers, and the consequent improvement in brake linings was estimated by the industry as saving the public \$15,000,000 a year.

"A cooperative research with the engine builders and petroleum refiners is resulting in better fuels and more uniform performance of automobiles under all weather conditions.

"This small building we are now in houses our 54-inch wind tunnel, which was built during the World War and in which many important military aeronautical problems have been solved. Wind tunnels are used to determine, by means of a model, the performance of any device designed to function in an air stream, but recently we have been studying the fundamental problem of the air flow in the tunnel itself, so that results obtained in different laboratories will be comparable.

"The large outdoor tunnel which you see to the north is 10 feet in diameter and is used for testing large models of buildings, bridge members, and other structural designs. The model you see in the tunnel is a miniature of the Empire State Building, New York's tallest skyscraper. It was constructed to a scale of 1 equals 250. Wind pressures at several different floor levels and at speeds up to 60 miles per hour are being measured.

"This large building (Northwest) houses our metallurgical laboratories, the testing of high-precision gages, and other experimental work, including that on sound, aeronautical instruments, etc. You see, we have a complete equipment of furnaces, a rolling mill, drawbench, forging press, and other metal producing and working equipment.

"Yes; it is really a small experimental metal-working plant, and I judge you can duplicate actual processes on a reduced scale." "That is the idea. You can not set standards for a big industry by sitting at

a desk and theorizing; you must get down to facts by actual experiments. We can study the mill procedure and show where improvements can be made by varying the constituents of a metal or alloy and methods of working it, and do it more quickly, cheaply, and more accurately than could possibly be expected in a full-sized commercial plant. That idea applies to much of our work, as you will see when we get to the Industrial Building.

"We will now walk across the 'campus' to the East Building to see the electrical work and the radio laboratory—that long, low building at the right. Let us go to the top floor of the Electrical Building. Here is the assembly room, where the staff members meet to discuss their work. Many scientific societies of the country meet here when they come to Washington."

"What a beautiful outlook." "Yes; you can see the Capitol, the radio towers at Arlington, the Naval Observatory, the new cathedral, and the greater part of the city. An attractive quiet location is really an inspiration for the best results.

"In this room on the third floor we are testing under measured conditions the life of incandescent lamps purchased by the Government. Samples of all lamps the Government buys are tested by the bureau, so Uncle Sam is reasonably sure to get what he orders and pays for.

"Other work deals with tests of batteries, performance of electrical instruments, studies of telephone systems, and the maintenance of the electrical standards. These include standard cells by which the standard of voltage is maintained, the silver voltmeter for maintaining the ampere, the current balance, etc.

"In this small building at the north end of the East Building experiments with high voltages (up to 100,000 volts) are in progress. Here is our absolute electrometer for measuring voltage by the attractive force on a metal disk, thus tying up the electrical with the mechanical units of measurement.

"The work on safety codes also heads up in the East Building. You have heard of the Electrical Safety Code, the Head and Eye Code for Industrial Workers, the Logging and Sawmill Code, etc.?" "Yes; the Electrical Code was used by our State government in framing its present regulations."

"Here in the Radio Building we work on fundamental problems underlying radio. We also aid almost everyone who uses radio, and this means a large portion of our population, by sending out standard frequency signals, which anyone can use in testing his or her receiving set. Ten years ago we published designs and descriptions of several simple receiving sets, and these undoubtedly did much to popularize radiobroadcasting. Here is our national standard of radio-frequency, maintained by quartz oscillators with an error of only 1 part in 10,000,000.

"We will now walk down to the Industrial Building to see the experimental plants for technical research in cement, stone, clay, glass, lime, plaster, paper, textiles, rubber, leather, sugar, and other structural and miscellaneous materials. In this central wing are located our big testing machines. The largest one, here on the left, has a crushing power of 10,000,000 pounds, and was recently used to confirm the strength of portions of the towers for the new Hudson River Bridge."

"Yes; I have seen pictures of that machine, and also the large Emery precision testing machine, which I notice in the room on the right. It is one of the most accurate testing machines in the world, is it not?" "Yes; that is correct. Its capacity is 2,300,000 pounds and the error is not more than 2 or 3 pounds.

"Across the areaway is the Kiln House, where research on optical glass and other ceramics work is in progress. Prior to the war we began to develop the technique for making optical glass. The importance of optical glass in the making of lenses for all sorts of laboratory, industrial, and military devices has attracted nation-wide attention to this plant. Here, too, work is done on refractories, porcelains, and enameled metal ware, as well as a part of our work on the fire resistance of structural materials.

"In these smaller buildings adjacent to the Industrial Building may be seen experiments of many sorts; for example, on intensity and duration of fires in buildings, the fire resistance of various types of roof construction, the fire and impact resistance of safes, and a wide variety of other work.

"Returning to the Industrial Building, we have experimental plants for paper making, for spinning and weaving textiles, for manufacturing and testing rubber goods, for the production of sugar, and many other materials of industry under controlled conditions. At the World's Fair held in 1915 at San Francisco this photographic laboratory on the third floor won the highest award for the quality of its photography. Here were developed the apparatus with which the sensitiveness of all types of photographic plates and films of American make were studied in great detail, adding a new chapter on the technical and practical side of photography. In another room was determined the relative utility of every part of a leather hide for making soles for shoes. This gave valuable data for the leather industry.

"These automobile tires are being run under experimental conditions to simulate road travel, and with means to measure the loss of power in the tires. We found an appreciable loss of power in transmission from the motor through the tires to the ground, varying with the design of the tires. In this laboratory specifications for tires were drafted, the details of rubber manufacture applied to specific problems, and various formulas tried out in making commercial rubber in the bureau's rubber mill.

"The cement laboratory is in this building. Research is in progress on important problems, some of them going on for many years. These include the study of the effects of sea water on concrete structures, to give data to engineers for making such structures endure where hitherto they had to be renewed every year or two; the effect of alkali waters on concrete tile used in irrigation projects; the effect of cement fineness on the strength of concrete; the microcrystallography of the constituents of cement; and many others affecting notably the technology of this important material. From here is administered the testing of Government cement—the cement used in the Panama Canal and other projects is tested by bureau experts and certified for use. A cement reference laboratory is maintained jointly by the bureau and the industry. Its experts visit the numerous commercial laboratories throughout the country, thus securing uniformity in equipment and methods.

"The ceramics research on the technology of clay products ranges from brick to fine porcelain, including glazes and enamels. The bureau's fundamental work in this field paved the way for the scientific use of American clays by specifying the means of pretreatment, mixing, and chemical methods so that some of the finest foreign products could be equaled.

"Here we end our trip. The time allowed us has passed, and you have seen many of the things which would interest you most. I hope you enjoyed your visit." "I certainly have enjoyed the glimpses of your work, and to prove it I am going to tell my friends all about your bureau. We have many industrial plants in our town; I see that much of your work and the data you have obtained would be of great value to them. We are still in the dark on many technical aspects of our work. I shall ask your advice on several problems in my own plant."

"We shall try to help you and will be glad to see you again at any time."

"Thank you; on my next visit I hope to spend at least a day here. It is one of the most interesting and instructive visits I have ever made."

COOPERATION BETWEEN BUYER AND SELLER

In a recent address before the Sixteenth Annual International Conference of the National Association of Purchasing Agents at Toronto, Canada, Robert F. Bowe, vice president Hunter Manufacturing Co., discussed an effective example of what cooperation between buyer and seller can accomplish in the standard specifications worked out by the rubber and pyroxylin coating group. (Commercial Standard No. CS 32-31.)

"For example," said Mr. Bowe, "I have in mind one construction of wide cotton goods which was being used regularly by many different buyers. Seven of these buyers had entirely different specifications which were demanded of the cotton mills. The fabric itself was approximately the same but the specifications varied in regard to count or tensile requirements. Under those conditions no mill could afford to carry all the various specifications in stock. Consequently, the buyers, some of whom are present,

were paying premiums for their requirements and had unnecessary delays in deliveries. Now see what was accomplished through cooperation and an intensive study of each other's problems. To-day, all who use that particular fabric can buy it from any one of a number of mills, made by each of them to the same specifications."

Mr. Bowe pointed out that this was made possible by a group discussion of 11 commission houses and 23 pyroxylin and rubber manufacturers, who last year developed standard specifications for their cotton goods requirements. He expressed as his opinion that the results of the conference are the most constructive of their kind which has been accomplished in the cotton-goods industry in many years, adding that it is "the final proof of what can be developed through a complete understanding between buyer and seller."

The commercial standard, which is entitled "Cotton Cloth for Rubber and Pyroxylin Coating," is now in the hands of the Government Printer and in due course will be available for purchase.

DUST EXPLOSIONS SERIOUS PROBLEM

National Fire Protection Association Preparing Codes for the Prevention of Dust Explosions

Attention is being given by the Dust Explosions Hazards Committee of the National Fire Protection Association to the preparation of a code for the prevention of dust explosions in country grain elevators, Hylton R. Brown, of the Bureau of Chemistry and Soils, said October 20 in a recent address over stations of the National Broadcasting Co. The committee, which functions under the leadership of the Department of Agriculture, met in Washington on October 20. The section of Mr. Brown's address dealing with codes for the prevention of dust explosions follows in full:

Since scientists first discovered that dust particles in suspension in air could be ignited and produce an explosion similar to a gas explosion, other scientists have tried to develop methods of overcoming this hazard. We now know that disastrous dust explosions can occur in any industrial plant where combustible dusts are created during the operating process. The chemical engineering division of the Bureau of Chemistry and Soils in the Department of Agriculture is constantly conducting investigations to determine the exact cause and nature of such explosions.

The results of these investigations have been made available to the Dust Explosion Hazards Committee and through them to the industry in the form of codes or regulations for the prevention of dust explosions. Such codes have been prepared for flour and feed mills, terminal grain elevators, starch factories, sugar and cocoa pulverizing plants, pulverizing-fuel installations, wood-flour manufacturing establishments, spice-grinding plants, and coal pneumatic cleaning plants. Hard-rubber grinding, sulphur pulverizing, and the production of metallic dusts are some of the lines of work still being studied, and special attention is being given at present to the preparation of a code for country grain elevators.

There are approximately 4,000 farmers' elevator associations in the United States, and the value of the plants through which they handle their grain is placed at \$65,000,000. It is estimated that these associations handle annually 550,000,000 bushels of grain. Many of their small elevators are built along the railroad or in a small settlement. Their isolated

locations make them a serious fire hazard. This is due both to the nature of the business and to the fact that available fire-fighting facilities are, as a rule, totally inadequate to cope with a fire in such a large building.

An analysis of fire losses in country elevators shows that practically all are preventable. It is a case where precaution, care, and attention to fire-prevention practices by the elevator operator are of greater value than fire-fighting equipment. Frequently when a fire starts in a plant of this kind, a dust explosion quickly follows and the flames are carried to all parts of the building. Before any real fire fighting can be done the structure and its contents are a total loss. It is for this reason that the Dust Explosion Hazards Committee plans to give special attention to the reduction of fire and dust-explosion hazards in country grain elevators.

There are a number of generally recognized precautions against fire which should be made a part of the operating regulations of every cooperative or country grain elevator. First, it is necessary to obtain a reliable manager, one who will take an active interest in fire protection, and then cooperate with him in eliminating the hazards usually found in such plants.

Require a thorough inspection of the plant before closing at night.

Provide sufficient help so that the care and repair of machinery are not neglected during the rush periods.

Hot bearings are responsible for many fires. Make special efforts to eliminate this source of trouble.

Stones, scrap iron, shotgun shells, matches, and other material capable of starting a fire in machinery have been found in grain brought to country elevators. Provide screens to catch this material before it enters the house.

Strictly prohibit smoking or the use of open flames around the plant.

Lightning is a frequent cause of fires in country elevators. To guard against this hazard properly equip all buildings with lightning rods.

Keep both the building and the surrounding land clean and free from accumulations of dust and rubbish which would cause the rapid spreading of a fire.

Place fire extinguishers and water barrels at convenient points about the plant and install a loud alarm or some means for calling assistance in case a small fire occurs. A small fire in a country elevator, if not checked promptly, is soon beyond control.

STEEL BONE PLATES AND SCREWS

Acceptances have been received from producers, distributors, and users of steel bone plates and screws representing an estimated 85 per cent of production by volume, and the success of the project was announced on October 15 with the effective date set for November 16, 1931. Hospitals and individual surgeons from all sections of the country have signed acceptances indicating a widespread interest in the project.

This commercial standard is the result of an investigation begun in 1929 by the American College of Surgeons, following the receipt of numerous complaints concerning the unreliability of the plates and screws then on the market. A subcommittee of the National Fracture Committee of the American College of Surgeons, with Dr. P. D. Wilson as its chairman, carried out the investigations in a very thorough manner and arrived at the conclusion that the failure of these plates and screws was largely due to the use of inferior grades of steel or improper heat treatment.

Following a request to the Bureau of Standards by the American College of Surgeons for the establishment of a commercial standard, the division of metallurgy of the Bureau of Standards submitted recommendations as to adequate testing methods to be used to insure proper heat treatment, and its recommendations were incorporated in a proposed commercial standard, which was adopted by a general conference on June 18, 1931.

The purpose of this commercial standard was not only to provide the surgeon with reliable steel bone plates and screws but to enable him to identify such material when offered for sale on the open market. Accordingly, each plate manufactured according to this specification is to be stamped with the inscription CS 27-31 and packed in a transparent sealed envelope bearing the guarantee label of the manufacturer.

The standard will be printed in due time as a publication of the Bureau of Standards. A mimeographed edition of the recommended commercial standard, which is essentially the same as the printed edition, is available, while the supply lasts, from the Division of Trade Standards, Bureau of Standards, Washington, D. C.

THE VALUE OF SPECIFICATIONS TO INDUSTRY

Standardization of Specifications Has Been a Major Factor in Attaining Industrial Leadership

By Capt. D. B. WAINWRIGHT,¹ Jr., *United States Navy*

The promotion of knowledge of the materials of engineering and the standardization of specifications and the methods of testing has been a great factor in attaining industrial leadership for our country and is essential to the future maintenance of this supremacy. The American Society for Testing Materials has made a splendid contribution to our country's progress and has a field of great usefulness lying ahead of it.

Nothing has been demonstrated more clearly by the present depression than the close community of interests between producers and consumers. Their relations are absolutely interdependent. Reduce consumption, and overproduction results; reduce production, and through unemployment a further reduction ensues in consumption. Proposed remedies for the present unfortunate business situation are based upon the principle that both producers and consumers will benefit alike in any plan that will increase consumption. This has served to bring the consumer, not alone the large users but the many small ones as well, into the limelight of general consideration. His needs and desires have taken on a degree of importance probably in excess of any previous experience of "a buyer's market."

There is a general impression that consumption has receded further than the conditions of unemployment warrant. This view is supported by the unprecedented accumulation of savings. Apparently even those who have the means are not satisfying their normal needs. This situation, if it does exist, is due probably in large part to apprehensions of the individuals concerned regarding the future and the consequent provision of an emergency fund. But is not this reticence to buy occasioned to some extent at least by another factor? There is considerable evidence that unscrupulous merchants have taken advantage of unsettled business conditions to flood the market with inferior materials which are sold to the unwary consumer as "mark downs" and "reductions." The unhappy experiences of the purchasers of these materials has undoubtedly made them suspicious of legitimate price adjustments. In any event, the present problem is to restore consumer confidence, and in the future to maintain it.

There is a growing demand on the part of the consumer for more knowledge regarding the things he buys and for protection against dishonest practices in the merchandizing field. This sentiment has made itself manifest in two directions: First, in the enactment of protective laws, and, second, in the formation of consumer associations. The desire of the consumer for further knowledge and protection is indicated, outside of the legislative field, by the consumer organizations, representative of which are the American Home Economics Association, the National Association of Purchasing Agents, the American Hospital Associa-

tion, the Hotel Managers' Association, the Garment Manufacturers' Association, the Consumers' League, the Better Fabrics Testing Bureau, the various better business bureaus, and others.

The modern trend of thought in this direction is indicated by one of the large advertising agencies in a paid advertisement in which is pointed out, among other factors, that "the most effective advertising is the most informative. Advertising which simply urges people to buy goods will have no place in the selling advertising of the future. Advertising will sell by interpreting goods in terms of usefulness or desirability to the consumer. Advertising which tells consumers how to use goods more efficiently, more thoroughly, how to take care of them, how to repair them, how to get the most of value and service out of them. And advertising of this kind will be—is to-day—more profitable than any circus stunt or ballyhoo that can be devised."

To carry out such a program of consumer education there is an urgent need for standardization to provide both the producer and the consumer with a yardstick of value. To be of the greatest worth to all concerned, standardization should be undertaken through the coordination of the interests of both producer and consumer and with their closest cooperation.

A manufacturer usually feels that his product is a little better than his competitor's, and objects to accepting a standard or specification which both can meet. Therefore, he is content as a rule with the development of standard methods of tests and the adoption of reasonable commercial tolerances. He seems perfectly willing to let each individual consumer set any numerical value he chooses on the requirements in the specification. This attitude disregards several very obvious advantages to the manufacturer resulting from the general use of standard specifications. Among these may be mentioned:

1. He is not compelled to supply for essentially the same purpose materials ordered to a variety of specifications that may differ by just enough to require separate production under each specification, involving many classifications in production, in stock files, and the like, with no commensurate benefits to the consumer.

2. In times of general business depression he can continue to produce "standard" materials knowing that when business picks up there will be a market for them. In this way he can keep his plant running and his organization intact, avoid excessive labor turnover, prevent large increases of overhead expense in relation to output, can frequently take advantage of favorable market conditions in purchasing raw materials, and, in general, maintain the efficiency of his operations. In other words, he follows the injunction of Poor Richard, "Drive thy business, let not that drive thee."

3. He knows exactly what he is expected to furnish and how the material will be tested and inspected by

¹ Abstract of paper by Captain Wainwright, Assistant Chief Coordinator, United States Government, before the October 15, 1931, meeting of Committee D-13 of the American Society for Testing Materials.

the consumer, thus reducing to a minimum the possibility of misunderstandings, which are both vexatious and expensive.

4. By thus standardizing the uniformity and reliability of materials, and thus eliminating unsatisfactory experiences of users in obtaining the qualities desired, he checks the encroachment of materials from competitive industries.

5. Last, but not least, he is provided with a defense against unfair competition by the unscrupulous within his own industry.

On the other hand, we find that the consumer, particularly the larger one, usually feels that the specification which he himself has drawn up and is using is entirely satisfactory, and that there is nothing to be gained by making the slight changes in it which are necessary to make it agree with the specification being used by other consumers of the same material. Admitting that the use of the standard specification automatically eliminates minor sales talk, this loss is more than overbalanced by the benefits secured. Those to the consumer include the following:

1. He benefits indirectly from the advantages of standardization to the producer.

2. He can secure truly competitive prices on the same quality of material.

3. Standard methods of test and inspection facilitate establishing a routine procedure for acceptance of material. When associated with quality labels, this will be of the greatest value to the small consumer.

4. The greater uniformity and reliability of materials and the fact that their properties are better understood will make possible their more economical use.

5. The procedure of purchasing is simplified and standardized, a matter of great importance in large organizations.

Standardization, especially of specifications, is not a static thing, but is dynamic, involving a continuous change to meet new conditions, either of the user's needs or of manufacturing processes. Doubtless the realization of this fact has served to make the type of specification known as the "materials" specification unpopular, particularly with producers.

The "materials" specification describes in detail the materials to be used. It generally includes tests to be passed at time of purchase, but requires no future performance from the material. This type of specification is based on the theory that the purchaser knows the best design, materials, and manufacturing practice for his needs; that he has had satisfactory service from such before; and that he desires to purchase exactly the same thing again, regardless of improvements. He would rather buy what he knows to be only fairly good, even at greater cost, than run the supposed risk of accepting something bad.

Periodic revisions of "materials" specifications are only a partial remedy for their defects, for no matter how frequently made they are always lagging behind the art. To make proper revisions the purchaser would have to keep himself informed on all the advances of the art. This is impractical, and experience shows that he has not done so in the past. It is strictly in the province of the manufacturer to be so informed.

A newer type of specification is the "performance" type. It is based on the principle that the product ought to pass tests which indicate the performance in

service. To meet this kind of specification, the product must be capable of rendering a definite service and by such tests the purchaser so assures himself. He is not concerned with the materials or the method of manufacture as long as the product accomplishes the desired results. The manufacturer, on the other hand, is left free to make the best product at the lowest cost to suit the service. He can take advantage of all modern technical knowledge and methods of manufacture.

The "performance" specification is free from the objections to the "materials" specification. While the "performance" specification fixes the lower limits of availability to render service, it does not in any way prevent or delay the making of better products. Improvements due to new materials and methods do not necessitate any revision whatever, for surely no one objects to getting something better than he demands. Unrestricted by any prescriptions as to materials and processes, the manufacturer is free, by the proper choice of them, to exceed the requirements or to satisfy them at a lower cost. If the purchaser desires to raise the limits it can be easily and quickly done without any fundamental revision. This type of specification is ideally suited to the purpose of both producers and consumers. Its use wherever practicable would facilitate the more rapid progress of standardization by eliminating many of the objections heretofore raised by both producers and consumers.

The preparation of a "performance" specification may appear, at first thought, to involve a highly scientific investigation, during which cross currents might develop and lead in so many directions that no conclusive results would be possible. Further consideration, however, will show that it is entirely feasible for consumers to develop, for many kinds of material, work factors based on actual service use of the material.

The problem is to select the variable factors entering into the service of a given material under its normal conditions of use and to reduce these factors to a simple mathematical formula in conjunction with an easily duplicated test, which shall simulate—in a test laboratory, let us say—actual service conditions.

Besides the advantages of the "performance" specification to the producer, this specification will generally be the means of securing considerable economy for the consumer. For instance, among 13 samples of hack-saw blades for hand frames, one purchaser found that the number of cuts per blade varied from 8.33 to 22.33, and that the number of strokes per cut varied between 4,602 and 8,523. He found that the best set of samples gave 167 per cent greater service than the poorest set, whereas the price of the best blade was only 10 per cent greater than the price of the poorest. A similar situation existed in selecting hack-saw blades for machine use.

By measuring the work done by valve-grinding compounds of two suppliers, a purchaser found that the compound of one cost 1.17 times that of the other, but the cost of removing a pound of metal with the compound of the first was approximately 74 cents as compared with \$1.47 for the same work with the compound of the other.

As evidence of need for standard specifications in the textile industry, one has only to note that textiles are not free from competition from materials of other

industries. Paper bags and paper towels are now being used instead of textiles, and paper tape is taking the place of twine. Some of the new floor coverings, such as linoleum tile, are competing with rugs. Transmission and conveyor belts are sometimes made of canvas, but many other materials can be used. A rope drive, for instance, may be either wire rope or manila rope. A transmission belt may be canvas, leather, or steel. While conveyor belts are generally canvas, they compete with bucket elevators, screw conveyors, etc.

In the electrical industry silk and cotton as insulating materials are meeting competition from paper and from synthetic resins. In the aircraft industries the all-metal planes and the all-metal dirigibles are competing directly with cotton. Is it entirely a coincidence that one of the few standard specifications developed by an A. S. T. M. committee is for Osna-burg cement sacks, an article which is suffering from inroads of the paper cement sack?

In considering a program of standardization, it is necessary to survey the means of carrying it out. A picture of the organization of the industry is needed, and the author must confess that the organization of the textile industry appears to be chaotic. It has been learned that there are a large number of national associations of textile manufacturers, divided on the basis of the fiber used and the material made. There are the National Association of Cotton Manufacturers, the American Association of Cotton Manufacturers, and the Cotton Textile Institute; three large associations made up of manufacturers of cotton goods.

Similarly, there are the National Association of Wool Manufacturers, the Rayon and Synthetic Fiber Institute, and the American Silk Association. There are the Association of Knit Underwear Manufacturers, the Knitted Outerwear Manufacturers Association, the National Association of Hosiery and Underwear Manufacturers, and many more similar groups, so that any individual manufacturer should logically belong to so many associations that it would keep him poor paying dues. These associations have

to do with manufacturers only. There are similarly a large number of associations representing the converters, finishers, bleachers, mercerizers, and dyers, many of whom have made some attempts at standardization.

Second, the distributors are represented by the National Retail Dry Goods Association, and, third, the consumers are represented by the American Home Economics Association, both of these being powerful associations but having done little or nothing about writing specifications for textiles.

There are many other associations in which consumers of textiles are grouped for other purposes, but which do include textile standardization in their work.

To date, however, the most important work in this field has been done by the large individual retailers acting independently of the manufacturers and of each other. Macy & Co., of New York City; Marshall Field, of Chicago; and Filene, of Boston, are probably the outstanding leaders from the department-store standpoint. Chain stores, such as Montgomery Ward, Sears-Roebuck, and J. C. Penny, have also been very active. The Pullman Co. and the Bell Telephone Laboratories should also be included in this group as contributing largely to the development of specifications for textiles.

The groups mentioned do not provide a central point of contact where the several interests concerned can get together and formulate standard specifications for textiles.

The demand for consumer standards in all products will grow, and rightly so. A group of more intelligent buyers is being developed. This means, inevitably, protection not only for the purchaser but for the honest manufacturer and the honest distributor.

What is needed is a new approach to the problem. Instead of being merely on the defensive against unsound plans, the textile industry should be on the offensive and take the lead in development of standards which will really be helpful to the consumer and consequently to the ethical concern in industry and trade.

SEIDELL METHOD STANDARD FOR VITAMIN "B"

International Conference Adopts Formula Devised by Specialists in U. S. Public Health Service

A method of preparing vitamin "B" concentrate devised by Dr. Atherton Seidell, of the United States Public Health Service, has been adopted as the international standard preparation by the International Conference on Vitamin Units and Standards, according to an announcement of the United States Public Health Service.

A report of the conference, which was organized by the Permanent Standards Commission of the Health Organization of the League of Nations and which was held in London, England, early in the summer, recommended the adoption, as international standard, "of the absorption product of the antineuritic B vitamin prepared in the medical laboratory, Batavia, Java, by the method of Seidell."

The method of preparing the standard, which was done by Doctor Jansen, consists in extracting rice pol-

ishings with water, adding sulphuric acid, salicylic acid, toluene (methylbenzene), and fuller's earth (specially selected for its absorptive powers). Subsequently, the solution is filtered off and the fuller's earth, after being washed with water and alcohol, is dried. Three kilograms of the fuller's earth absorbate represents the antineuritic B vitamin from 100 kilograms of rice polishings.

The report recommended that a batch of 25 kilograms of the standard preparation be prepared and that this amount be kept at the National Institute for Medical Research, London, acting for this purpose as central laboratory on behalf of the health organization of the League of Nations.

Although declaring that there is no evidence that loss of potency is liable to occur in the standard absorption product, the conference suggested that further investigations of its stability be undertaken by certain laboratories, among which was included the National Institute of Health of the United States Public Health Service.

STANDARDIZING GRADES FOR LIVESTOCK AND MEATS

Work of Division in Bureau of Agricultural Economics Outlined

By C. V. WHALIN¹

The livestock, meats, and wool division is a research and service organization in the Bureau of Agricultural Economics, United States Department of Agriculture. Its activities are devoted largely to the national problems of marketing livestock and livestock products.

Livestock products include meats, meat products, wool, mohair, hides, fats, and other animal by-products. Since meat is the principal product of livestock, and since meat values and the practices and conditions in the wholesale and retail meat trade largely determine the values and the marketing of livestock, the solution of many of the problems of livestock production and marketing is found in the wholesale and retail meat trade. In many respects there problems are identical, and services rendered to either are beneficial to all branches of the industry. While livestock marketing problems claim first attention, those attending the marketing of meats and meat products require and receive almost equal consideration.

Livestock and wholesale meat values are influenced and largely determined by the actions of meat consumers in their demand and preference for meats. The national livestock and meat trade is so evenly balanced that when the meat consumers buy freely or economize collectively there is an almost immediate reaction back through the various trade channels and agencies to the farm and feed lot. The livestock producer is far removed from this barometer of his business and as a rule is not familiar with the underlying economic factors asserted there which so vitally affect his enterprise.

The various intermediate commercial agencies between the livestock producer and his ultimate market—the consumer—are not organized for advising the producer adequately regarding the true conditions. Most of them are in no better situation in this respect than he, and few can serve their own needs adequately.

Since livestock production and marketing to satisfy consumer preference and demand is a business that promises to become even more highly specialized, the

producer is demanding information regarding market conditions and trends of the essential economic factors and influences affecting his business that he may keep his production and marketing programs adjusted to them. Lacking his own service organization he looks to an unbiased and financially disinterested agency to provide the needed service and demands it of his Government. In this he is joined by the marketing and distributing agencies because of their need for similar services.

The livestock, meats, and wool division was created to supply these services in so far as practicable. In the performance of its duties, therefore, the division comes in close contact with the national trade in meats and meat products as well as in that of livestock, as it gathers, analyzes, and disseminates useful market and economic information and renders needed authorized services to all branches of the industries concerned.

In order to render the required services most effectively there must be an intimate contact with and knowledge of all branches of the meat trade as well as with the livestock industry and livestock markets. This is acquired by rendering specific needed services to the wholesale and retail meat trade. Among these services are the wholesale meat market news service, meat grading service, beef grading and stamping service, and economic information service.

The standardization of the grades for meats is fundamental to practically all of the services rendered. It is basic to a practical and usable meat market news service, because it provides a uniform national language to disseminate market information regarding quotations and values in a nation-wide news service. It is basic to trading on specifications and fundamental to economic analyses and statements regarding the industries. Such standards, both tentative and official, for the various market classes and grades of meat have been worked out with the aid of the various branches of the meat trade. Since livestock grades and values are closely related to the grades and values of the meats they produce, meat grade standards and livestock grade standards have been so correlated that similar nomenclature is given to both the animal and the meat of similar qualities.

REPORT OF TRUNK SIMPLIFICATION SENT TO INDUSTRY

A summary report of a recent general conference, which approved a simplified practice recommendation covering the box sizes and terminology for stock varieties of trunks, has been mailed by the Bureau of Standards to all interests for their consideration and written acceptance.

This recommendation establishes lists of outside dimensions of the box, not considering bulges, handles, rollers, or unusual protrusions for wardrobe,

dress, steamer, and tray and wardrobe hand trunks. It is estimated by the industry that the general adoption of the recommendation will effect a reduction in the variety of wardrobe trunks from 91 to 4, dress trunks from 102 to 3, steamer from 68 to 3, hand trunks, tray style from 55 to 4, and hand trunks, wardrobe style from 46 to 3.

Subject to the written acceptance by the industry, the recommendation will be effective for new production on January 1, 1932. A further transitional period from January 1, 1932, to July 1, 1932, is allowed for clearance of existing stocks.

¹ Principal marketing specialist, livestock, meats, and wool division, Bureau of Agricultural Economics, Department of Agriculture.

PREDICTIONS BY MACHINERY

Extraordinary Device Accurately Forecasts Tides and Currents

By Capt. PAUL C. WHITNEY¹

Accurate knowledge of the rise and fall of tides and the direction and velocity of currents, published well in advance, is an invaluable aid to the navigator who must operate his vessel on exacting schedule. The increased distribution of tide and current tables is but another evidence of our unprecedented national progress and the ever-expanding service rendered by the Coast and Geodetic Survey to those who follow the sea.

By means of a highly specialized machine, conceived by officials of this bureau of the Federal Government and constructed in its shops, this service is able to much more quickly predict the time and height of high and low tides, and the direction and velocity of currents at hourly intervals, for any given place for any day in any year, and do it with unfailing accuracy.

To describe this machine, originally used only in predicting the tides, would overrun the space of this article, for it took many years to build, and each year meant many calculations and much study by experts who devoted their lives to learning the laws of the tides and their relation to the sun, moon, and mother earth.

Some 45 years ago Dr. William Ferrel, of this bureau devised a machine, prior to the use of which tidal predictions were laboriously computed by means of empirical tables and graphs. The idea of the present apparatus, better adapted to the prediction of tides of every type, was conceived by Dr. R. A. Harris, of the coast survey, and constructed in its shops under the direction of Ernest G. Fischer. It was not a small task, for work was begun in 1895 and not completed until 1910.

As illustrated in the accompanying picture, this is a supercalculating machine of large proportions, made of shiny brass and blued steel, with cogs, pulleys, dials, and a fine, flexible chain, which was run more than a thousand miles in an oil bath to give it proper pliability before it was placed in the apparatus. The machine is 10 feet 9 inches in length, 6 feet 2 inches in height, and 2 feet wide. The dimensions of its some 15,000 separate parts were chosen with particular view to rigidity and freedom from flexure. Workmanship and material are such as to produce deterioration due to wear to the minimum, and the wearing parts are planned so as to permit of replacement or repair without ever interrupting the regular output of the machine.

This complicated piece of machinery not only does the work of at least 60 mathematicians, but it is much

superior to experts in this line of work because of its speed and the assurance of accuracy. Accuracy is one of the details concerning which the Coast and Geodetic Survey is most particular, for mistakes in any of its many activities might mean loss of life and ships.

Tides are dependent upon the combined pull of the sun and moon, and the effects upon the tides of the ever-changing relative positions of these bodies can be predicted with unfailing accuracy. Tide prediction, therefore, becomes solely a complicated mathematical problem, requiring the consideration of some 37 factors, or constants, each representing one phase of position of sun and moon.

Before beginning the predictions for any port, the constants, representing the different components for each constituent tide, which have been obtained from

a series of tidal observations, are set on the proper cranks and dials which are so arranged that when the machine is put in motion by means of a crank and gears it will sum up the effects of all these elementary waves into the tide of nature, which is also depicted upon a roll of moving paper. The

resulting graph gives the datum, with hours and days indicated, and the rise and fall above and below the datum plane. The machine is also so constructed that this summation is indicated through dials on the face of the instrument as high and low waters, with their heights and times of occurrences.

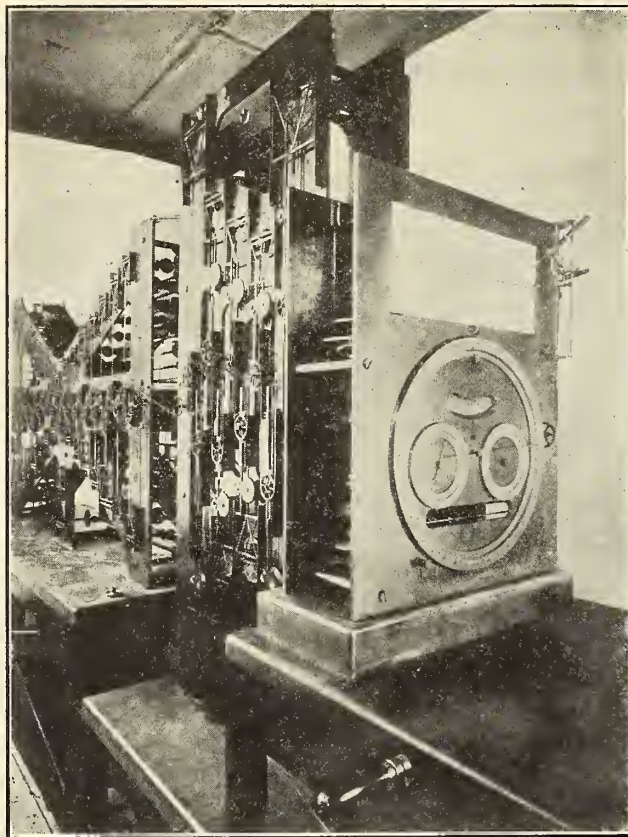
To predict a year's tides for a station takes one man from 2½ to 4 hours according to the number of components used, for the setting of the machine, and from 8 to 15 hours, according to the complexity of the tides at the station, for copying the indicated results upon the form ready for the printer.

These predictions can be made for a number of years in advance as well as for one year; they can be ascertained just as readily for years that are past. Winds and other meteorological conditions will cause a change from the normal and in instances of this nature must be allowed for.

Some idea of the importance of this work may be obtained from the fact that a ship's officer can tell exactly what the tide will be at any given point on a certain day—information obviously of the greatest value in marine transportation. The Coast and Geodetic Survey now issues seven publications on these predictions; namely, tide tables for the United States and foreign ports, tide tables for the Pacific coast, and special pocket-size editions for New York Harbor, Boston Harbor, San Francisco Harbor, and Puget Sound.

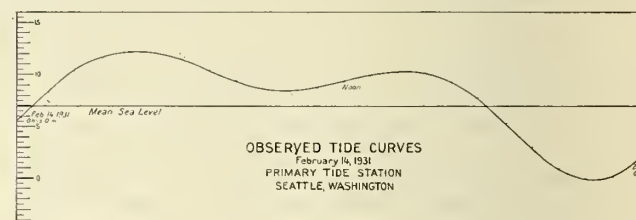
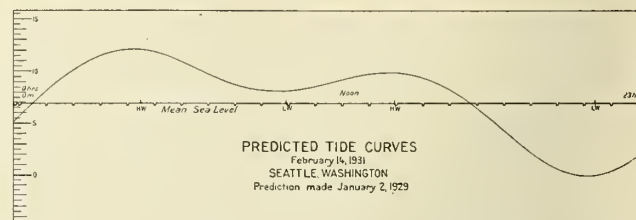
Modern science has never produced a more remarkable machine than the Coast and Geodetic Survey's "tide predictor," which does the work of 60 mathematicians and accurately gives the time of high and low tide in any part of the world, for any day of the past or future. The value of these machine-made predictions may be judged from the fact that the tide tables in seven Government publications are based on data furnished by this invention.

¹Chief of the tide and current division, U. S. Coast and Geodetic Survey, U. S. Department of Commerce.



A view of the predicting machine of the United States Coast and Geodetic Survey

This machine is likewise used for current predictions, with the result that this service likewise publishes predicted current data. There is the same periodicity in tidal current movements as there is in tides. The waters respond to the tide-producing forces of sun and moon not only with the vertical



rise and fall of the tide, but also with a horizontal forward and backward movement known as the tidal current. These two movements are intimately related, being merely different phases of the single phenomenon of the response of the waters to the tide-producing forces, and therefore may be and are similarly predicted on this machine after a special set-up of the dials.

NEW 7,000 SERIES OF STANDARD WOOD MOLDINGS

Of much importance to the entire lumber trade is the announcement by the Central Committee on Lumber Standards of the issuance in published form of the new revised 7,000 series of American standard moldings.

This new publication makes a timely appearance following President Hoover's announced advocacy of home building, and designers and builders now will be able to specify from stock beautiful effects in beamed ceilings or paneled walls; properly constructed door and window sections; assemblies of authentic Colonial and Gothic designs. Heretofore, such details were possible largely for luxurious homes where specialized millwork and high architectural fees prevailed. Now the modest home at standard prices can be an architectural gem, as far as interior accoutrement is concerned.

The book contains some 250 patterns, each consistent with good architecture, and each with serial designations; 81 typical assemblies; a cross-index from the revised to the old series, and an extended index to the various types of moldings.

In making the announcement concerning the new publication, John H. Kirby, chairman of the Central Committee on Lumber Standards, predicted that because of the painstaking manner with which this authorized revision of the original 7,000 series was made and its universal approval by architects and

manufacturers and distributors of lumber and millwork, these new molding patterns and designs should quickly become standard practice throughout the lumber and millwork manufacturing and distributing branches of the trade. To that end he urges every lumber and millwork manufacturer to secure, either from his association or direct from the Central Committee on Lumber Standards, Transportation Building, Washington, D. C., a copy of the new publication and to put the new patterns and sizes into actual production as rapidly as possible.

The regular procedure of the division of simplified practice of the Bureau of Standards provides for the revision of any existing simplified practice recommendation of the Department of Commerce and its subsequent publication when the acceptors thereof have recorded with this office their written approval of any changes proposed by the standing committee of the industry.

These revised 7,000 series molding designs and sizes having been regularly approved and recommended to the Department of Commerce by the Central Committee on Lumber Standards, the standing committee of the lumber industry. The division of simplified practice has therefore circularized the various branches of the lumber industry requesting the associations and companies to indicate on an inclosed blank form whether or not they wish the new moldings included in the next edition of Simplified Practice Recommendation R 16-29 in place of the molding patterns appearing in the current edition.

ADOPTING UNIFORM LABELS FOR WHEAT PRODUCTS

How the Federal Food and Drug Administration Cooperates With Milling Industries

By G. L. BIDWELL¹

When Congress enacted the Federal food and drugs act, 25 years ago, that body had primarily in mind the protection of the public from impure, unwholesome, and falsely or fraudulently labeled foods and drugs. Such economic cheats flooded the market previous to the passage of the measure, and there was a crying need for national legislation which would prevent the interstate shipment of such fraudulent commodities. Twenty-five years' enforcement of the national pure food law has effected a substantial improvement in the quality and in the honesty of labeling of foods and drugs that reach the American consumer.

Now, it is axiomatic that any legislation which increases public confidence in commodities on sale—and thus stimulates buying—has a beneficial effect upon business, the producer of such commodities. And while the Federal food and drugs act is primarily designed to safeguard the consumer, the amazing growth of the food and drug manufacturing trades in the past quarter of a century is good evidence that the law has not neglected the interests of the manufacturer.

As a matter of fact, so confident have operators in the food industry become of the essential importance of the pure food law that the influence of the canners led, in the summer of 1930, to the passage of an amendment to the act known as the McNary-Mapes bill, which materially strengthens the food and drugs act. This amendment was passed at the instance of the canning industry and did not originate in the Department of Agriculture.

Day-by-day operations in the enforcement of the food laws bring officials of the Federal Food and Drug Administration into constant and friendly relationship with business. This is well illustrated by developments in the stock-feed industries within the last two decades. About 20 years ago certain representatives of the feed industry met in Washington with several State and Federal feed officials to discuss mutual problems of manufacture and regulatory control of these products. This meeting resulted in the formation of the American Feed Manufacturers' Association and the Association of American Feed Control Officials. The two associations, one representing the industry and the other representing control officials, have worked harmoniously ever since.

For 20 years the Food and Drug Administration and its predecessor, the Bureau of Chemistry, have been constantly represented in the Association of American Feed Control Officials and have taken active part in its deliberations. That association's definitions, standards, and resolutions have resulted in a marked improvement in practices in the industry and have brought about substantial benefits to the industry itself, to control officials, and to the public. A great deal of credit for this improvement is due to the in-

telligent and friendly cooperation of State control officials and members of the feed-manufacturing trades with Federal officials.

The Food and Drug Administration likewise has many contacts with manufacturers of foods designed for human use. One of the principal ones comes through the operations of the Food Standards Committee, a group appointed by the Secretary of Agriculture, which consists of 9 members, 6 of whom are State officials, and 3 of whom represent the United States Department of Agriculture. This committee has the duty of assembling information by independent investigation and chemical analysis—of determining what is regarded as good commercial practice by those who make the food product—of finding what consumer understanding may be, and then of drawing up for the approval of the Secretary of Agriculture a definition which, in the opinion of the committee, will be a fair and workable standard from the standpoint of the consumer, the manufacturer, and enforcement officials. If the Secretary approves, the definition is promulgated as official, and it then becomes the duty of the Food and Drug Administration to apply that definition in enforcing the food and drugs act.

One year ago, upon recommendation of the Food Standards Committee, the department announced definitions for whole wheat and entire wheat flour. Those definitions were designed to unify labeling of certain wheat products, and the compliance therewith by the industry meant, in some cases, radical changes in industrial practices. Representatives of the milling industry met in Washington and had conferences with officials of the Food and Drug Administration. While there were initial differences of understanding, as is natural, most of those were ironed out and the industry is now enabled to label its products entirely in conformity with the act.

As a result of these conferences the Millers National Federation, Chicago, Ill., has published a pamphlet containing the official definitions, which publication has been distributed widely to the milling trade. This circular contains, in addition to the new standards, considerable valuable information concerning the provisions of the food and drugs act, together with suggestions regarding proper labeling of intermediate wheat products, definitions for which have not been established.

The Food Standards Committee of the department has spent a large part of its time in considering questions relating to flour, cereals, and the various products made therefrom. Every definition that goes out from that committee is of advantage to the milling industries, since, while the standard may cause temporary embarrassment at first, in the end it always results in unifying the branding and naming of milling products and places competition among manufacturers of such products on a more fair and definite basis. The standards serve as a definite guide for the

¹ Chemist in charge, cattle feed unit, Food and Drug Administration, Department of Agriculture.

labeling of various wheat products, thus benefiting the millers and also help to place consumers and bakers in a position where they can know exactly what they are getting.

The adoption of definitions for all food products is of advantage to the food industries in another way, in that such standards serve as guides for State authorities in the enforcement of State pure food legislation and thus tend to hasten the formulation and adoption of uniform rules for the labeling of foods in the different States. The resulting advantage to food manufacturers who ship interstate is at once apparent.

The food industries have materially assisted the committee in formulating these standards and defini-

tions. A recent hearing on mayonnaise was well attended by mayonnaise manufacturers, who gave the committee valuable information on manufacturing methods and whose opinions on what should constitute a quality product proved of great value. The same is true of farina, semolina, and macaroni manufacturers, and the Millers' National Federation contributed data which were highly significant in the formulation of definitions for wheat products. Many other cases of cooperation with the committee by manufacturers of other food products could be mentioned here; in fact, manufacturers have been in close touch with the committee in its survey of practically every food schedule considered up to the present.

STANDARD APPROVED FOR HOSIERY

Trade Approves Standard for Methods of Measurements and Uniform Measurements

Believing that a reduction in the variations of hosiery lengths is of economic importance to both the user and the manufacturer, a general conference of the trade, held October 29, 1931, under the auspices of the Bureau of Standards, approved the adoption, as a commercial standard, of the standard in use for several years by the members of the National Association of Hosiery and Underwear Manufacturers.

Through the medium of the approved standard there will be provided uniform methods of measurement and uniform measurements for the guidance of producers, distributors, and users, in order to eliminate confusion now existing from a diversity of measurements and methods of making measurements. There will likewise be provided a uniform basis for guaranteeing full lengths. The standard is to be applicable to finished hosiery as delivered by the manufacturer.

The interest of the individual purchaser of hosiery in this program is evident when consideration is given to the discomfort resulting from wearing hosiery, the leg of which is too long or too short. Although not relatively as important as the length of the foot, for the variation in length of an inch may not cause any decided discomfort, yet the purchaser wishes to have some reasonable assurance that the hosiery is the same length at each purchase.

The chief consideration on the part of the manufacturer is in the establishment of a fair standard as a matter of trade procedure. This must bring about fairer methods of competition. It will also tend to decrease the number of disputes and cancellations. The saving in materials will be a factor in those instances where the manufacturer is now exceeding the proposed standard by several inches. In addition, it was brought out at the conference that the adoption of this standard is expected to increase the efficiency of the mill.

According to E. M. Schenke, research associate of the Bureau of Standards, representing the National Association of Hosiery and Underwear Manufactur-

ers, who conducted the tests at the Bureau of Standards which led to the development of the standard, the hosiery industry has readily recognized the advantages to be gained by the adoption of a uniform method of measuring the length of hosiery and the fixing of standard lengths. As a result this work was undertaken by the association as one of its problems of research and standardization.

This particular standard is for ladies', men's, children's ribbed, children's sport, infants' ribbed, and infants' and children's socks. While other lengths will be available on order, the standard length for women's hose is 30 inches, that for men's is 14 inches for size 10 and under and 14½ inches for sizes above 10.

There are now two other projects under way at the Bureau of Standards, under the sponsorship of the National Association of Hosiery and Underwear Manufacturers. One relates to standard dimensions of the various parts of men's and women's hosiery. The other is a study of the wearing quality of hosiery.

The purpose of the second project is to devise satisfactory tests for the resistance to rubbing of the toe and heel of hosiery and to apply this test under standardized conditions to a variety of hosiery constructions in order to find out the constructions that stand the best wear. The wearing quality of hosiery depends on the material and the workmanship built into the hosiery by the manufacturer. This program is not concerned with the wear resultant from the use of ill-fitting hosiery or ill-fitting shoes, of garters that do not function properly, of runs resultant from snags, or similar causes within the control of the user.

L. R. Gilbert, who represented the division of trade standards, Bureau of Standards, under whose auspices the conference was held, stated that the approved commercial standard would immediately be submitted to the trade for the necessary written acceptance, in accordance with the established procedure of the bureau. Subject to this acceptance the standard will become effective for new production and clearance of existing stocks on March 1, 1932.

ASSOCIATION AND COMPANY STANDARDIZATION MOVEMENTS

Fundamental Principles Essential to Success of These Activities

By P. G. AGNEW, *Secretary, American Standards Association*

All buying and selling in which goods do not come under the immediate personal inspection of the purchaser must necessarily be based upon some standard. The existence of a standard broadens the market for a commodity, the breadth of the market being coincident with the extent to which the standard is recognized and used.

Examples of association work.—In a great many fields, technical and professional societies have been instrumental in group standardization. Most of the early group standardizations were developed by the technical societies. For example, the fundamental standardization work which made possible the interchange of railway rolling stock, which, in turn, made possible our national transportation system, was carried out by the master mechanics and master car builders through what were then their technical societies—now merged as a technical branch of a trade association, the American Railway Association.

A. S. M. E.—Dimensional interchangeability of machinery parts and supplies, such as bolts and nuts, pipe flanges and fittings, small tools and machine-tool elements, screw threads, and pipe threads have been dealt with extensively by the American Society of Mechanical Engineers. After the organization of the American Standards Association, all the society's standards in these fields were broadened, so that official representatives of all other interested organizations were included in the technical committees, thus giving the work a national status.

A. P. I.—One of the most complete and thorough standardization programs to be found in any industrial field is that of the American Petroleum Institute which is probably unique with respect to the speed and energy with which it was organized and set in productive operation. The work includes a large group of materials and supplies such as pipe, belting, tool joints, rig irons, derricks, cordage, and pumping equipment. Officers of the institute have estimated that the industry has for years invested several hundred thousand dollars a year in speeding up its vigorous standardization program, and the industry considers that its program has been extremely profitable investment. The institute licenses manufacturers making tubular and other material complying with its specifications to stamp its official monogram upon their materials.

Apples and citrus fruits.—Striking examples of the standardization of products for purposes of large-scale market exploitation are furnished by western fruit growers. The citrus growers of southern California and the apple growers of Washington and Oregon have created national markets for their products primarily by the use of a clever, but simple and thorough-going standardization program.

The apple growers have brought about a grading of their apples, which is so thoroughly well done and is so completely but simply indicated on each box that the producers, the distributor, and the consumer may

readily know that each box contains 40 pounds of apples; the exact number of apples in each box; the quality of apples both as to color and flavor, and that the apples are of closely uniform and known size.

A very similar marketing program based upon standardization has been carried out by the citrus growers of Southern California. While their competitive advantage over the Florida growers has not been so great as in the case of the western apple growers, the more thorough-going job of standardization of the Californians has given them some very definite advantages.

The technical society, its membership broadly representative of a wide industrial field, is in a particularly good position to provide for the interests of miscellaneous, unorganized, and scattered groups.

In a trade association, corporate management as such is directly represented. In a strictly professional society this is impossible since the basis of organization must necessarily be the individual, and to recognize corporation control would break down the professional standing of the organization. This is, I believe, the basic reason for the steadily increasing rôle which the trade association is playing in the standardization movement.

Decision and authority can not be permanently separated. It is fundamental in human nature that management should insist on being in a position to control decisions affecting its own policies. The normal agency for bringing this about in cooperative work affecting competing companies is the trade association.

It is significant that trade associations are more and more setting up technical and professional divisions within their own organizations.

The national body.—Through a recent reorganization, the American Standards Association is now a federation (maintained at present by 45 national organizations, 8 departments of the Federal Government, and 37 trade associations). The American Standards Association is purely a service organization providing:

1. A form for the cooperative development and revision of standards.
2. A systematic method of formal approval of "American Standards."
3. The official channel of international contact and cooperation in standardization matters.

More than 200 trade associations, all of the great engineering societies and nearly 40 departments and bureaus of the Federal Government are actively participating in the work.

Conflicts and controversies.—The standardization process often leads to conflicts between groups. While most of these conflicts finally turn out to be more apparent than real, they frequently lead to controversies which at times take on somewhat serious aspects. Sometimes they are merely jurisdictional in character, but frequently they center in real problems

affecting in important ways, the nature and content of the standards in question.

Drawn issues are bound continually to arise in any movement like standardization which has to do with live issues of moment to industry. A great number of examples could be cited in which the industrial and technical groups concerned have faced each other and the common problem across the table and found an equitable and satisfactory solution because they were bound that such a solution could be found. A tense situation in connection with the elevator safety code has been replaced by a continuing cooperative research program. Still more tense situations in regard to electrical safety codes have been relieved by entirely workable solutions. A stalemate of many years' standing between manufacturers of cast-iron pipe and the principal consuming groups has given way to a cooperative research program.

Guiding principles—The company.—There are certain guiding principles which should be followed when standardization is carried on by a company; namely:

1. Executives should be alive to the economic importance of the movement, and in sympathy with it.
2. Standardization work should be specifically provided for and systematically organized, each department concerned taking an active part.
3. The company should cooperate actively in standardization work of the trade association, and through it, in the development of national standards.
4. The head or heads of the standards organization should act as authoritative spokesman of the firm in standardization work in their trade association, and should cooperate in the standardization activities of technical societies.
5. Conversely, the set-up should be such as to permit an immediate start in the introduction of each new national or association standard which concerns the work of the company.
6. The goods the company buys, and the goods it produces for sale should be dealt with by this same general method.
7. All this should be equally true of big and of little firms, of manufacturers, distributors, and operating companies. In the same general sense it should be true of city, State, and Federal Governments.

Associations.—Associations engaged in standardization work should be guided by the following principles:

1. Associations should have effective machinery for promptly getting a real consensus of all members concerned with a particular subject.
2. An educational function of the association should be to bring home to the executives of its member com-

panies the economic importance of standardization, and its significance as a managerial tool.

3. In consultation with other groups, and with the national body, each organization should decide what part of its standardization work is to be handled purely as an association matter on account of its scope and influence being limited to one narrow field without reflexes upon other industries, and what part needs cooperation with other groups from the point of view of national standardization.

4. The organization should become thoroughly responsible and should require responsibility on the part of its members and committees.

(a) It should provide responsible representatives on the working committees of the national body, and whenever possible, back up such representatives by a committee and then see that its members are kept informed of the acts of their representatives (most men do not fully understand the meaning of representation, or of the responsibilities which it entails. It is the duty of a representative to keep sufficiently in touch with his organization so that he can correctly interpret its attitude in the development of the work and in participating in decisions in committee; to keep his organization informed of developments; to act as a leader in the formulation of the policies of organization in regard to the matters with which he is dealing; and to refer back to his organization questions upon which he feels unauthorized to speak for it).

(b) Responsibility in the sense of carrying out with administrative competence, work for which responsibility has been assumed.

(c) Accept responsibility for the consequences of the acts of its authorized committees and representatives. Judged by these criteria, the majority of the numerous associations and societies could not justly claim a consistent record for responsibility.

(d) Technical staff assistance to voluntary committees is generally necessary (such assistance generally pays for itself many times over in saving the time of committee men, minimizing the number of meetings required, etc.).

(e) The association should systematically promote the use, by its own members and by industry generally, both of its own standards and of those national standards in whose formulation it has taken part.

(f) Organizations should make their decisions in standardization matters with due regard to the interests of other groups and of the general public, and also (specifically in the case of technical societies) with regard to the interests of unorganized consumer groups, as well as on the basis of service to their members.

THIRTY-EIGHT STATES ADOPT CENTRALIZED PURCHASING METHODS

Centralized purchasing methods, involving the principle of buying on specifications, have been adopted by the State governments of Maine and North Carolina during the current year. This now brings the total number of States which are operating under a policy of centralized purchasing to 38, according to a report prepared by Walter N. Kirkman, purchasing agent for the State of Maryland and chairman of the

committee on governmental purchasing of the National Association of Purchasing Agents.

In his report Mr. Kirkman stated that among counties and cities which considered the adoption of central buying as an economy and efficiency measure during the past year were the counties of West Virginia and Washington, and Albany County, N. Y.; and the cities of Vancouver, Canada; Niagara Falls, N. Y.; Knoxville, Tenn.; New Bedford, Mass.; Omaha, Nebr.; Chattanooga, Tenn.; Ottawa, Canada; Peoria, Ill.; Providence, R. I.; New Haven, Conn.; Tacoma, Wash.; and York, Pa.

VALUE OF SPECIFICATIONS IN THE MANUFACTURE OF STEEL

Standardization Aimed to Afford Greatest Economy to the Ultimate Consumer—Work Still in Its Infancy

By JOHN BRUNNER¹

With the development of the Bessemer and especially the open-hearth processes of making steel in large quantities, and at a reduced cost, its use has grown to such an extent that it now materially affects our mode of living and tends to influence the development of modern civilization in many directions. Through its use, marked changes have been made in all fields of construction, manufacturing, agriculture, transportation, preservation, and distribution of food supplies, and of many other commodities, making the steel industry one of the most important basic industries.

With such an extensive application of steel many different requirements are placed upon it so that it may be of a quality that properly functions in service. The many years of experience and observations in its manufacture and in its performance in service have enabled engineers to prepare specifications for the various qualities required in its many applications. The number of varieties of steel in respect to special qualities required by the users have steadily increased until to-day the steel maker has a large number of different specifications to comply with in manufacturing steel.

It is apparent that in order to furnish the proper qualities the steel maker must be closely guided by requirements of specifications, and hence the specifications are of great value to him in his operations. Many specifications, like those of the American Society for Testing Materials, are the result of cooperation between the representatives of the users and of the producers of steel and are used to a larger extent than other specifications in connection with the grades they cover. Many other technical bodies have gone into the matter of standardizing specifications, and hence we have to-day a large number of standard specifications covering many grades and qualities of steel.

Under some specifications the steel is tested, inspected, and accepted before it leaves the mills. In other cases, where the specifications relate to chemical composition only, and the tests are made by the users, the proper interpretation of requirements as to other qualities in the steel is often obtained through personal contact between the user's and producer's technical staffs and through observation of its performance at the user's plants.

With the close competition which exists between the fabricators in selling their finished products, the performance of the steel in their operations as far as it affects their final cost and the quality of their finished products, becomes most important. The number of operations used by the fabricators in the production of their finished product are usually reduced to a minimum within the working endurance of the steel, in order to obtain economic fabricating costs. Hence the steel maker must at all times exercise the greatest care in his production and be in touch with the perform-

ance of the steel in the fabricator's plants, so as to develop a steel which meets the requirements in connection with his particular equipment and method of manufacturing.

While specifications cover the principal requirements of the quality of the steel as determined by tests the question of furnishing a steel best suited for the particular purpose for which it is to be utilized, in the last analysis, rests with the steel maker, as specifications can not be so complete as to fully prescribe the quality of the steel which would give the best performance in the further fabricating process and in service.

The steel maker must therefore select and use the proper kind of raw materials in the right proportions, the proper time in each of his processes, the proper temperatures in each process, and many other details which are required to produce the best steel for a given purpose. These details can not be covered in specifications, nor can they always be closely checked by tests made on the final product of the steel mill.

With the rapid development in the use of steel an increasing number of technical men are employed in the steel industry, and these men are engaged in an earnest study of developments and of improvements in manufacturing methods and in the final quality of the steel products sold to the ultimate consumer.

With the research, investigation, and effort now being made to obtain the best results in the final products, the specifications for steel have increased both in number and in their requirements in order to cover the developments and secure the improvements desired. As a result of these efforts many different compositions and alloys are employed by the fabricators to meet their particular aim.

The steel maker has more specifications to comply with to-day than he has had at any time in the past. A few of these specifications apply to special structures or special purposes only and can not, for this reason, be standardized. There are many others which could be standardized in groups, resulting in the best economy in the production and in the use of the steel.

Specifications which accompany orders for steel may be divided into several groups in accordance with their requirements. Some specifications, as those for structural materials, etc., require physical tests on specimens cut from the finished product at the steel maker's plant, and the results of these tests form the basis of acceptance. This group of specifications is, in general, well standardized with definite and economic requirements.

Another specification group requires chemical composition of the steel, together with impact tests. Railroad rails and railroad axles come under this group in general, and the product is accepted on the tests at the mill. This group covers highly important grades of steel and is well standardized with slight variations to cover local conditions.

Another group requires that check analyses shall meet certain requirements as to composition. Attempts have been made to standardize this group, but

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standards have not become general in use. A small group of specifications requires that physical tests as well as chemical composition fall within certain ranges. It is often difficult to meet the requirements in this group as the two sets of requirements are not always properly coordinated with each other. Other groups require hardness tests, fracture tests, deep-etch tests, grain-size tests, and cleanliness tests. No definite standards have been established for most of these groups. One of the groups, and one which covers considerable tonnage, accepts the steel on analyses made on test ingots taken at the time the steel is poured.

Many specifications, before they are transmitted to the mill for execution, must include not only quality requirements, but also rolling tolerances, cutting tolerances, branding, stamping, tagging, bundling, blocking in the cars, and other details which can not be covered by standard specifications, but must be developed for each customer to suit the unloading, handling, and manufacturing equipment which he has in his plant.

All specifications relating to orders in the steel manufacturer's plant are distributed to the men in responsible charge of any part of the steel making, rolling, etc., and serve as guides throughout the various processes so that when the steel reaches the inspection, it will comply with the requirements of the specifications. Some of the steel is inspected by representatives of the purchaser, but a large part of it is inspected by the steel maker's inspectors, in which case the steel maker's responsibility, as to compliance with the specifications, usually does not end until the

material has been used by the fabricator. This illustrates the value of specifications to the steel maker and the necessity of having complete specifications for all steel products in order to satisfactorily and economically fill the orders.

In the requirements of specifications the necessity of sufficient tolerances and ranges in quality, as well as in section and size, should be recognized so as to permit the steel maker to conduct his operations consistent with good practice and in line with the best economy, as it is reflected on the product furnished the ultimate consumer.

Through the cooperation between steel users and steel producers improvements in the steel quality required for the particular product in which it is used have gone forward at a rapid rate during the past few years. To accomplish this new equipment, new methods, and new practices have been evolved, but we have evidently not reached the limit as yet, and better accomplishments may be obtained in the future.

Steel for a long time to come will continue to be the most reliable construction material in most fields, and its use will increase as new fields in which it can be used are developed. The American Society for Testing Materials has done splendid work in standardizing specifications, and several other technical organizations have followed its lead, thereby obtaining better material at reduced costs. However, the work of standardization has only begun, and it should be continued with all vigor to accomplish its aim, namely, the greatest economy to the ultimate consumer.

HOME BUILDING AND HOME OWNERSHIP

Conference to be Held in December to Promote Home Building and Home Ownership

The President's Conference on Home Building and Home Ownership, which will be held early in December, will be attended by individuals coming from each of the 48 States, and representing many national and State organizations, chiefly civic and commercial in nature, which are working for the promotion of home building and home ownership or interested in programs leading to the improvement of existing condition of housing and home making.

President Hoover in announcing this conference a year ago stated that it would study on a nation-wide scale problems of home building and home ownership in order to arrive at a better understanding of the questions involved and in the hope of inspiring better organization to cope with such problems. He appointed Robert P. Lamont, Secretary of Commerce, and Dr. Ray Lyman Wilbur, Secretary of the Interior, as joint chairmen of the conference and Dr. John M. Gries as its executive secretary.

A planning committee of 30 members appointed at that time divided up the subject matter and arranged for the appointment of small committees, usually of approximately 15 members each, to weigh the facts and formulate their collective judgment as to the best ways of meeting the problems assigned to each. Twenty-five committees are already at work upon their researches.

The problems that are being studied involve the setting for the home; city planning and zoning; sub-

division layout; landscape planning and planting; utilities for houses; financing; home ownership and leasing; problems of taxation in relation to housing; blighted areas and slums; reconditioning, remodeling, and modernizing; house construction—relative merits of different types of dwellings; fundamental equipment—heating, lighting, ventilation, plumbing, and refrigeration; standards for kitchens, laundries, and other work centers; household management; home-making; home furnishing and decorating; farm and village housing; negro housing; relation of income and the home; organization and management of large scale operations; and home information centers.

Each of the committees is engaged in the compilation of the best available information on its subject matter and is studying, so far as possible, the experience of business groups, civic organizations, public departments, and others who have already been working on the problems assigned to them. They recognize that the first essential is the determination of facts, and the formulation of collective judgment based upon the best contemporary experience of leaders who have special knowledge of these subjects. Several of the committees are conducting special investigations in the field, or by the questionnaire method, and these findings will be analyzed and reports drawn up which will be made available to the country when the conference is called.

MARKETING BEANS OF KNOWN QUALITY

Federal Bean Inspection Services Protect Buyers and Sellers

By W. A. WHEELER, U. S. Department of Agriculture

A standard of quality is essential to good will in the merchandising of any product. This is particularly applicable to food products. Of these products none is more susceptible to being standardized on a basis which reflects production problems, marketing practices, and consumers' demands than dry edible beans.

The relative importance of beans as an article of food in the United States is not always understood. It is conservatively estimated that the American people consume 1,000,000,000 pounds of beans annually. Furthermore, the annual demand for beans indicates that the per capita consumption, as well as the total consumption, is steadily increasing. Beans are consumed by all groups and classes of people in all parts of the United States. Inasmuch as 90 per cent of this supply is produced in widely scattered areas—mainly in New York, Michigan, Montana, Wyoming, Idaho, Colorado, New Mexico, and California—there arises the problem of distribution. This problem is complicated by the fact that there are at least 21 varieties or kinds of beans produced and that local preference may be for a particular variety obtainable only from a distant producing State.

Perfection of quality or freedom from defects (such as split and damaged beans and foreign matter) is a controlling factor in the grading and consumption of beans. In order to obtain the quality of beans demanded by some consumers, intricate milling or re-cleaning, and, in many cases, hand-picking operations are necessary. It is rarely economical or feasible to attain the same high standard of quality for the entire crop. Therefore, if buyers, whether wholesale or retail distributors, canners or housewives, are to get the quality of beans desired, there must be a definite basis for defining and measuring that quality. In addition to that, there should be provided for the determination of such quality a disinterested third-party agency, especially on large commercial transactions.

It is for this purpose that standards of quality for beans have been prepared by the United States Department of Agriculture and recommended for use in the purchase and sale of this commodity. These standards at the present time cover 21 commercial classes of beans, which include practically all of the important varieties of beans produced and marketed in the United States. The standards do not provide the same high quality for all classes of beans, as this is not practicable from the standpoint of the producer nor necessary from the consumer's viewpoint.

They do, however, provide a uniform basis for determining the relative quality of all classes of beans. There are three numerical grades designated for each class of beans covered by the United States standards, U. S. No. 1, U. S. No. 2, and U. S. No. 3, except Lima and Baby Lima beans, for which there are only grades U. S. No. 1 and U. S. No. 2. The U. S. No. 1 grade for a given class of beans represents the highest quality of such class handled commercially; U. S. No. 2

and U. S. No. 3 are lower qualities. Beans which do not meet the requirements of one of the numerical grades are designated as "U. S. Sample grade."

In order that the United States standards may be consistently and accurately applied to beans purchased on this basis, a Federal bean inspection service has been organized. Inspectors are now located at primary shipping points in Idaho, Montana, Colorado, and California and at several important markets, among which are Los Angeles, San Antonio, Kansas City, Chicago, Toledo, Atlanta, Philadelphia, and New York. An inspector is also located at Lansing, Mich., and is available for making inspections at accessible points in that State. These inspectors are trained and licensed by the United States Bureau of Agricultural Economics and authorized to issue a Federal certificate showing the grade and class of each lot of beans inspected by them. This certificate is official evidence of the true quality of the beans inspected. During the past season 70 per cent of the beans shipped from Idaho and a smaller percentage of those shipped from Montana and Colorado were inspected by a Federal inspector and both buyer and seller protected against shipments of questionable quality, and the inevitable delay and financial loss attending rejections at destination.

A Federal inspection certificate can be had on all beans shipped out of the States and markets named. Contracts should be made on the basis of United States standards and certificates issued at original shipping point. Dealers who purchase, for example, U. S. No. 1 great northern not only get beans of a quality equal to or better than so-called 98's, but if a Federal certificate issued at original shipping point is demanded, are assured that they will get what they buy.

This system of inspection applied to beans produced in the more humid States of Michigan and New York would tend to eliminate controversies relative to moisture, as well as promote more consistent interpretation of other quality factors. Federal inspection means more than the use of United States standards. It provides for uniform procedure with standardized equipment in the application of such standards. Furthermore, Federal inspectors are under the close supervision and control of a centralized disinterested agency—the United States Bureau of Agricultural Economics—which assures the use of all equipment in accordance with approved methods. Such a system can only result in more efficient inspections and a more nearly accurate determination of the grade or quality of all lots of beans inspected.

The foregoing statements are justified by the results of the use of Federal inspection during the past four years. The number of inspections the second year was more than double the number made during the year this service was inaugurated. During the third year, which ended June 30, 1929, inspection increased 25 per cent over the preceding year, not counting any

new inspection points, and a further increase of 60 per cent was made during the year ending June 30, 1930.

Buyers who have been making their purchases on this basis are appreciating more and more the value of the Federal certificate and the protection it affords against the receipt of beans which are not equal to the quality specified in contracts. This sentiment is expressed by one of the largest wholesale distributors as follows: "We think so much of it (Federal inspection) we would not buy beans any other way." Many other large buyers and distributors who have not been so fortunate in being able to purchase all of their requirements on this basis are in accord with this idea and have asked when this service will be available at shipping points in all important producing sections. This will come when there is sufficient demand from both buyers and shippers to warrant it. The demand

for the service in increasing as the value of official bean quality insurance becomes known.

Beans which start on their journey to the ultimate consumer, under the protection of a Federal certificate of grade, escape the many pitfalls to which they are ordinarily subjected en route. Shippers in producing States are appreciating more and more that buyers and wholesale distributors want beans of assured quality and they are preparing to deliver such beans with the aid of United States standards and inspection. Furthermore, if consumers gain a clearer understanding of the meaning of quality expressed in the terms of U. S. No. 1, U. S. No. 2, etc., the consumption of beans should continue to increase. In like manner, foresighted producers will appreciate the influence of quality on the consumption and will lend their support to a program of marketing beans of known quality in terms of the United States standards.

FOOD TESTING PROGRAM ENLARGED

The scope of the food-testing program of the American Medical Association has been enlarged to include several new procedures, according to the association. It was originally planned to test only food products that claim special health-giving qualities, to check these products against their advertising, and where claims are justified to issue a certificate of approval, which includes the association stamp on foods and advertising. The new provisions in the program are—

1. Testing labeled goods for purity and relation of package contents to copy on label.
2. Passing on advertisement as to authenticity and justification of claims.
3. Issuing of certificates of approval when merited.
4. Testing of approved products frequently to insure continued and uniform adherence to approved standard.
5. Censoring of manufacturer's advertising continually to see that all claims are justified.

REAFFIRMATION OF STANDARD FOR GAGE BLANKS

A meeting of the standing committee on gage blanks held at the Bureau of Standards, October 16, 1931, voted to reaffirm the commercial standard entitled "Plain and Thread Plug and Ring Gage Blanks, CS 8-30" for another year or until revisions are ready for general approval.

The standing committee indorsed the program laid down by the American Gage Design Committee at the meeting on May 20 in accordance with which the commercial standard will in due course be revised and extended to cover:

1. An alternative design of the reversible type gage, the design shown on General Motors Hand-book Sheets, Volume III, pages F-14 to F-16, inclusive, for plain cylindrical plugs and that shown in Volume III, pages F-17 to F-21, inclusive, for thread plugs.
2. Adjustable limit snap gages, 0 to 12 inches.
3. Adjustable limit length gages, 0 to 12 inches.
4. Adjustable limit length gages, 12 to 36 inches.

5. Combined solid snap and ring up to and including 1 inch (ordnance gages).

6. Taper pipe thread gages up to and including 8 inches.

7. Plain plugs above 4.510 inches to and including 12.010 inches.

8. Plain rings above 4.510 inches to and including 12.010 inches.

9. Thread plugs above 4.510 inches to and including 12.010 inches.

10. Thread rings above 4.510 inches to and including 12.010 inches.

FEDERAL SPECIFICATIONS

Nineteen specifications were acted on by the Federal Specifications Board during the month of October. Of this number, 16 were submitted for revision and 3 for consideration as proposed specifications. Copies of these specifications (in mimeographed form) and further information can be obtained from the Federal Specifications Board, Bureau of Standards, Washington, D. C.

The new specifications submitted for revision bear the new designation in accordance with the system used in the Federal Standard Stock Catalogue.

New designation	Specifications to be revised	F. S. B. No.
-----	Feed stuffs, concentrated.....	25c
-----	Grains.....	25c
-----	Hay, feeding.....	25c
-----	Hay and straw (for), bedding.....	25c
AA-C-311	Chairs, office.....	409
AA-T-101	Tables and stands, typewriter, wood.....	478
GG-S-776	Straightedges, steel.....	599
PP-S-71	Sausage, bologna style.....	575a
PP-S-81	Sausage, frankfurter style.....	574b
PP-S-91	Sausage, pork.....	573a
PP-S-101	Sausage, Vienna style, canned.....	576
QQ-S-691	Steel, plates (marine boiler).....	549
QQ-S-701	Steel, staybolt (boiler).....	550
CCC-C-521a	Cloth, shade.....	-----
-----	Lockers, steel (clothes).....	471
-----	Cabinets, steel (for clothing, stationery, storage).....	471
New designation	Specifications proposed	F. S. B. No.
-----	Baskets, waste, metal.....	-----
-----	Cases, transfer, steel.....	-----
-----	Fire-alarm systems, electric, hand operated (shunt type).....	-----

FOURTH PAN AMERICAN COMMERCIAL CONFERENCE

Conference Approves Measure to Have Specifications Developed for Agricultural and Mineral Products Which Enter Into the Latin American Export Trade

Inter-American trade problems covering a wide range of subjects were discussed, and a number of important resolutions and recommendations adopted, by the Fourth Pan American Commercial Conference in session at the Pan American Union, Washington, D. C., from October 5 to 13. With delegates in attendance representing every government of the American republics and numerous chambers of commerce and trade groups from the different countries; with addresses by the President of the United States, by the Vice President, and other prominent officials, as well as by leaders in the business, economic, and financial world of the Americas, the conference assumed a significance of unusual importance.

President Hoover, after stating that the theory of the United States is that "commercial enterprise, except as rare emergency action, is essentially a private undertaking," went on to say that "the larger significance of your meeting is attested by the fact that at stated intervals the accredited representatives of the Governments and of the commercial organizations of this continent come together with a view to interchange of experience and fostering that mutual confidence without which the development of international commerce is impossible."

The subject of standardization of commodities as an aid to commerce and the protection of producer and consumer occupied a most important part on the agenda of the conference.

In opening the group meeting on standardization the chairman, J. Silva Herzog, called on H. J. Besley,¹ chief of the grains division, United States Department of Agriculture, to explain the methods employed in the United States in the classification of grains. J. A. Jauregui, delegate of the Museo Social Argentina, then spoke on the obstacles in the grain trade, due to the irregularities which exist in grain standards, and offered a resolution to the effect that the Argentine Republic be advised of a method to be followed in the standardization of grains, inasmuch as the inter-American grain trade has become a very large one. This resolution was referred to a committee for proper action.

The work which has been done in the United States to protect the consumer, and at the same time to encourage industry and agriculture, was explained by Dr. A. S. McAllister, Assistant Director, Bureau of Standards.

Chile has taken a great interest in the subject of standardization of commodities, declared Ricardo Heatley, delegate from Chile, who pointed out that his country had formulated many regulations with respect to this subject.

C. V. Whalin,² chief of the livestock, meats, and wool division of the United States Department of Agriculture, spoke on the standardization of cattle, meat, and wool products in the United States. He

was followed by Wells A. Sherman, chief of the fruits and vegetables division of the same department, who gave a résumé of the methods employed in standardization of fruits and vegetables.

Robert F. Martin,³ of the United States Department of Commerce, supported the opinions expressed during the conference regarding the need of establishing fixed standards favorable to both producer and consumer. He referred specifically to the success achieved by the Haitian Government in the improvement of coffee from that country, the price of which increased from 3 to 40 per cent during the years which the experiment of grading coffee has been in process.

Following these discussions the conference approved a resolution which recommended to the governments of the American Continent that (1) they make known the specifications, composition, and analysis of their agricultural and mineral products, which enter into their export trade; (2) that they subscribe to the draft convention formulated by the Inter-American High Commission for the establishment of uniform specifications and common nomenclature in the countries of this continent; and (3) to reiterate to the Inter-American High Commission compliance with the resolution on uniformity of specifications adopted at the Sixth International Conference of American States, held at Habana, Cuba, in January and February, 1928.

The Sixth International Conference of American States recommended that "the Inter-American High Commission shall at an early date address the organizations of importers and consumers of the United States who import Latin American products, with a view to obtaining all manner of data concerning the form in which the products at present exported in greatest quantities from each Latin American country to the United States is most acceptable, including full details relative to packing.

"The executive council of the Inter-American High Commission shall furnish all such data to its sections in each country, requesting them to convey the same to the producers and exporters with a view to the fulfillment of the recommendations they contain as far as possible.

It was recommended that there be created a Pan American Commission, to be formed of representatives of the organizations of consumers and exporters of the United States and of the organizations of producers and exporters of each Latin American country, which will take up the study at periodical meetings of the best means of standardizing the specifications of each product, endeavoring to adopt therefor the metric decimal system, a uniform name in Spanish for the products of identic specifications, and to have the equivalent of such name in other languages used for the designation of the same product only.

It was suggested that the dates and places of meetings be fixed by the governing board of the Pan

¹ See "Grain Grading," by H. J. Besley, COMMERCIAL STANDARDS MONTHLY, October, 1931.

² See "Standardizing Grades for Livestock and Meats," by C. V. Whalin, in this issue of COMMERCIAL STANDARDS MONTHLY.

³ See "Standardization of Export Products in Haiti," by Robert F. Martin, in COMMERCIAL STANDARDS MONTHLY, December, 1930.

American Union and that the preliminary work of the commission be carried on by the governing board in cooperation with the Inter-American High Commission, and that adequate educational and propa-

ganda work be carried on by the governments members of the Pan American Union in collaboration with the sections of the Inter-American High Commission.

AMERICAN STANDARDS ASSOCIATION

News of Associational Activities During Month of October

Current developments of the following standardization projects under the auspices and procedures of the American Standards Association have been furnished by that association:

Coal-mine tracks, signals, and switches.—A revision of the American standard for coal-mine tracks, signals, and switches, which will outline further standardization and simplification of frogs and turnouts for coal-mine tracks for both gathering and main-line haulage ways, is being developed under the technical direction of the American Mining Congress. Final specifications should be available to the industry within a few months and should result in marked decreases of stocks of track materials carried on hand by manufacturers and coal-mining companies.

Consideration is also being given to the possible necessity of requesting amplification of certain sections of the standard specifications for cross ties and switch ties.

Sieves for testing purposes.—The association has approved the request of the American Society for Testing Materials and the Bureau of Standards to initiate a project for the development of specifications for sieves for testing purposes. Prior to giving approval to the request the association made a canvass of the major interests affected to ascertain whether or not the proposal would be acceptable. It is anticipated that the sectional committee of the A. S. A. will cooperate with the technical committee on sieves for testing purposes of the International Standards Association, looking to the development of an international standard for testing sieves.

National Electrical Code.—Copies of the revised edition of the National Electrical Code, which has been published by the National Board of Fire Underwriters, are now available from the headquarters of the American Standards Association, 29 West Thirty-ninth Street, New York, N. Y. The revised code received approval August 18, 1931, as an American standard.

Drainage of coal mines.—A revision of American tentative standard for drainage of coal mines has been approved by the association, which gives the project the status of an American recommended practice. The revision deals in detail with the methods of installation and operation of equipment used for control of mine drainage. Included among the topics are pumps, piping, storage of mine waters, limitations of natural drainage methods of unwatering abandoned workings, the effect of mine waters on drainage equip-

ment, and recommendations regarding the use of acid-resisting metals and alloys.

Safety codes.—A group of 6 safety codes, 5 of them for the prevention of dust explosions in industry, and 1 providing for the use of inert gas for fire and explosion prevention, has been approved by the association. The need for such codes is evidenced by the fact that more than 28,000 industrial plants in the United States are subject to the hazard of dust explosions. These plants employ approximately 1,300,000 persons, and their annual production is valued at more than \$10,000,000,000.

The codes, which were prepared by the sectional committee under the sponsorship of the National Fire Protection Association and the United States Department of Agriculture, are as follows: Installation of pulverizing systems for sugar and cocoa, prevention of dust explosions in starch factories, prevention of dust explosions in terminal grain elevators, prevention of dust explosions in wood flour manufacturing establishments, prevention of dust ignition in spice-grinding plants, and use of inert gas for fire and explosion prevention.

The codes for the use of inert gas for fire and explosion prevention, for the prevention of dust explosions in wood flour manufacturing establishments, and for the prevention of dust explosions in spice-grinding plants are new. The code relating to the prevention of dust explosions in terminal grain elevators is a complete revision of the project originally approved in 1928, while the one for the prevention of dust explosions in starch factories and that of installation of pulverizing systems for sugar and cocoa represent minor revisions.

The regulations for the prevention of dust ignition in spice-grinding plants has been prepared as a guide to safe practice in the construction and operation of such plants. Although there has as yet been no serious dust explosion during the normal operation of spice-grinding plants, the existence of a potential hazard made the preparation of this code advisable.

Provision is made in the code for the use of inert gas for fire and explosion prevention, for the dilution of the air in inclosures in which flammable liquids, dusts, or vapors are handled, so as to reduce the oxygen contents of the air to a point where combustion can not occur. The regulations in question include a table for the maximum permissible oxygen percentage for various flammable substances, and provides for the use of flue gases, carbon dioxide, and nitrogen, or other inert gases.

VIBRATION TESTS FOR AIRPLANES

Naval Aircraft Factory Has Developed a Standard Vibrator for Its Tests

By C. D. TRIPOLITIS¹

Vibration and its effects upon structures is attracting the attention of all engineers and particularly those engaged in the construction of aircraft. The vibrations caused by the engine, the propeller, and the wind resistance against the structure, struts, and wires combine themselves in such a way that it is impossible to determine their exact characteristics. The Bureau of Aeronautics, of the Navy, has been experimenting with various types of accelerometers and oscillographs to determine the nature of these vibrations, but only with a limited amount of success.

The question of fuel tanks and their service life came to the front about two years ago when fuel tanks apparently well constructed had sprung leaks after, comparatively, a short period of service. The question of fatigue of the metal and joints, particularly aluminum alloy welded joints came up for considerable discussion, and the Bureau of Aeronautics proceeded to settle the question by actually vibrating fuel tanks on arbitrary values of frequency, amplitude, and duration.

A prominent airplane company constructed the first tank vibrator. This vibrator consisted of two main parts—the stationary base, fixed to the floor, and the vibrating platform. The base carried a 2-inch rotating hexagonal bar finished and fitted to ball bearings at either end and a pulley at one end for belt driving. The vibrating platform is pivoted at one end; at the other end it has a 6½-inch steel plate resting on the hexagonal bar. The bar is rotated at 600 r. p. m., making a frequency of 3,600 cycles per minute and amplitude five-sixteenths of an inch. The duration period was set at 25 hours. This equipment has several distinct disadvantages. The noise was a very objectionable feature. The hexagonal bar, in spite of perfect lubrication, becomes round in a short period of operation.

The vibration was not similar either throughout the platform or for varying weights.

Several modifications were made to this machine at the Naval Aircraft Factory, without materially improving the difficulties mentioned. Several other types were constructed at the factory applying the cam principles, air hammers, or eccentric weights with the carriage supported on springs, with varying degrees of success, but the same difficulty of compensating for different weights was always present.

The Naval Aircraft Factory has finally adopted a vibrating machine which is a modification of a "sand sifter." Its motion is based on the principle of centrifugal force generated by the circular motion of two steel balls, located diametrically opposite one another.

The main housing is rigidly attached to the underside of a rectangular platform 40 by 60 inches. This platform is flexibly connected to a base by means of three bolts and heavy rubber washes at each corner. The platform is perforated with ¾-inch holes for bolting tank supports or other structures thereto.

The frequency of this machine has not been accurately determined, but it is in the neighborhood of 3,600 cycles per minute. The amplitude is slightly less than one-sixteenth of an inch. The type of motion is double conical with the apex in the center and the axis of motion identical with the axis of the vibrator shaft. Theoretically there is a neutral axis on the vibrating platform at right angles to the rotating shaft. This condition, however, does not exist. The entire platform has a certain amount of vibration which is maximum on the two sides and "tapering off" toward the center on the other two sides.

The machine has been in successful operation for more than a year with loads varying from 100 to 1,200 pounds. The load, apparently, does not alter the characteristics of the machine as was found to be the case with previous types, and therefore no compensation of load has to be made.

Apparently the double conical type of motion of this machine is more severe than the linear motion caused by a cam or the original hexagonal bar, or a cylindrical motion generated by an eccentric shaft.

In order to establish a definite duration for tank tests the Bureau of Aeronautics contemplates testing several fuel tanks of a type or types of construction which have successfully passed in service of not less than 1,000 flying hours. The average life of these tanks on the vibrating machine will be considered as the standard vibrating period which other designs will be required to withstand.

Private manufacturers who prefer to construct their own vibrating machines will be required to submit one or more tanks to the Naval Aircraft Factory to be vibrated on the Navy's standard vibrator, and by conducting similar tests on their own machines, a time ratio can be established between the Navy's standard vibrator and those of private manufacturers.

¹ Naval Aircraft Factory, Philadelphia, Pa.

TO IMPROVE MARKETING METHODS

To provide for systematic study and discussion of marketing problems and formulation of standards of principles in this field, an association for the advancement of science in marketing was inaugurated at a recent meeting in New York. The conference was attended by 112 of the leading retail executives, marketing officials, consultants, and research men. For the present it has been decided to name the organization the American Marketing Society (an association

for the advancement of science in marketing) and to consider a permanent name after January 1, 1932.

Activities will be carried on largely through two sets of committees—one termed as "operating" and the other as "technical." Technical committees thus far suggested include formulation of research, standards for marketing courses, marketing terminology, industrial marketing, consumer demand, simplified practice, trading areas, market data, cost of distribution, manufacturers' selling policies, sales quotas, and coordination of marketing activities.

SIGNIFICANCE OF SPECIFICATIONS

Five Essential Details of Purchase Specifications Outlined

By P. PARKE¹

It is obvious that when a purchaser orders materials to a specification, whether it be his own, the manufacturer's, or those prepared by a technical society, he has studied his requirements and concluded what materials are more suitable for his purpose. In ordering to specification, he benefits from all the research, experimental, and development work of which the specification is the final summary.

The question may be asked, "Why so many sources for specifications; why not buy to the manufacturer's specification?" The

answer to the latter part of the question is that this is frequently done; and to the first part, the answer is that the individual manufacturer's specification commonly represents the product which he can most conveniently produce. The manufacturer's specification is valuable as a guide to the trade, though it may not precisely comply with the requirements of the buyer.

Specifications supplied by such an organization as the A. S. T. M. have a greater value because they represent the results of the composite effort of the various interests making up the trade as a whole. No doubt in many cases the specifications of such a society are compromises, but in all cases they are reliable and are a valuable guide to consumers; but many users have problems of their own, necessitating studies and investigations which may indicate certain modifications or deviations from standard specifications. The usual procedure in such cases is to formulate, on the substantial foundation already laid, the user's own specifications. As experience shows the way, he revises his specifications and keeps them up to date. The thought, study, and compilation of experience incident to this process must inevitably be of value alike to the manufacturer, the user, and the industry as a whole.

All products of one industry, as they become the materials of another, must be carefully checked. The user of steel must know that the material supplied to him is precisely what he wants so that it can be put

into production without hitch or hesitation. If an error is discovered after production starts, the result will be a shop tie-up, with machines idle and production schedule disjointed until replacement is made. With improper material, a costly amount of scrap must result. Without specifications there are too many chances for something of this sort to go wrong.

The purchaser may leave the matter of specification to the producer, who will do his best to supply precisely what is wanted, for in such cases he commonly

guarantees his product. But something may go wrong either through lack of complete understanding or through error in the producing plant. In that event the user, not having ordered to specifications, must rely on the manufacturer and he has no means of checking the material before starting production. Improper material will cause delay and expense to the user, because, while the manufacturer replaces defective material, he does not stand the consequent expense incidental to delay.

In referring to improper material, we may, by way of illus-

tration, refer to such items as sheets and plates. These may be perfectly proper for certain uses, but undesirable for others. One user may emphasize strength, another ductility, for cold-pressing steel; yet another may require a special surface finish and uniform thickness. Again, in forging steel, one user may require the maximum degree of ductility for materials subject to shocks; another may need the maximum strength where stiffness is important; and yet another may find that the cheapest grade of material will answer his purpose, and that to use anything more expensive would add to his cost without in anywise improving his product.

Specifications to cover the precise requirements permit the best and only assurance of obtaining entirely suitable material. They are invaluable to the large consumer who commonly draws his material from several sources of supply. Their proper application in such cases insures that materials from different sources will be of uniform and suitable quality.

A user of steel may require deliveries at widely separated localities, but of absolutely uniform quality.

"What is the demand for a specification but a repetition of the age-old desire for a definition of the needs of man?" asks the author. "In its economic significance, the specification is an aid to the progress and well-being of mankind." He summarizes the advantages to the buyer in five parts.

1. Specifications are evidence of the fact that thought and study have been given to the service requirements for which a particular material is intended.
2. They constitute a standard for measuring and checking up on materials as supplied. Such checking insures against delay and waste in fabricating plants, which would occur with improper materials.
3. They are invaluable to the large consumer who commonly draws his material from several sources of supply.
4. They promote the highest and best use of materials for each particular purpose.
5. They open a field of fair competition.

¹ Paper delivered by Chief Engineer Parke, of the Pullman Co., before the recent joint meeting of the American Society for Testing Materials and the Western Society of Engineers, at Chicago. He spoke on the economic significance and value of standard material specifications to the large user of steel.

If, for example, we require steel wheels delivered at the Atlantic seaboard, we do not order them from Chicago; yet we must be sure that the wheels, from whatever source, shall conform to a rigidly fixed and uniform standard of quality.

Both safety and economy in wheel service depend upon the closest adherence to the standards which have been developed and proved by service. It is highly improbable that anyone in a position of responsibility would purchase or use in passenger service steel wheels from a variety of sources on the manufacturer's guarantees without specification to insure uniformity.

All manufacturers have not had the direct service experience so essential to safety and economy in wheel operation. Only when the cumulative experience of wheel makers and wheel users is embodied in a specification can uniformity be insured among wheels drawn from a variety of sources.

To this end, of course, a specification fully outlining the requirements is essential. The user from his experience with various grades is in excellent position to tell what grade of material will answer his purpose. There comes a time when special analysis and thought on the most economic use of materials is of first importance.

Thus we may ask, "Are we getting all we can out of carbon steel? Can or should alloy steel be substituted?" In asking these questions we may have in

mind considerations of strength, or safety, or of economy.

When it comes to the soundest economic use of materials the employment of specification in inquiries for material not infrequently leads to helpful suggestions from manufacturers. Their experience may have enabled them to suggest certain changes in specifications through which costs may be reduced. Thus the highest and best results economically will be obtained from sheet steel when no useless finishing labor is expended on it. A high degree of finish should be used only where it is essential; plain rolled mill finish should be used where it will answer as well.

At times the highest and best use of sheet steel may justify the employment of a costlier alloy product, and the principle of best utilization is applicable to other varieties of steel.

If it is true that competition is the life of trade, then it seems equally true that only by the use of specifications can a fair competitive field be insured. How else can a user make known his precise requirements to competing manufacturers in such a way as to insure that they will all have precisely the same understanding of his needs? It simply can not be done.

To use steel wheels once more as an illustration, we may note that wheels are a highly competitive product, but they are such only because of the use of specifications. If any steel of special quality is needed, a specification showing the requirement immediately opens up a competitive field.

MARKETING THE RADIO

Standards Needed to Guide the Public When It Buys Radio Sets

By ORESTES H. CALDWELL¹

For the past year the radio business has been in utter confusion and the public has been mystified when it came to buy a radio set.

Confronted with all kinds of conflicting claims and prices set up by manufacturers and dealers, the general public has pretty nearly lost all sense of the values involved in radiobroadcasting receivers, with the result that "now no one knows what to pay for a good radio set."

Externally sets look much alike, and without standards or ratings of performance by which to be guided the layman is likely to buy a set far below the level of tone quality and sensitivity which he would have otherwise demanded had he known how important these three factors would be to his future enjoyment of his purchase. As a result, homes throughout the land are full of poor tinny-sounding sets, the public's musical ear is being injured, and the radio industry can not understand why the level of price demand keeps continually lowering.

The above conditions exist in spite of the fact that the standards of broadcasting have been continually rising and the service of the great stations has been steadily improving in point of tone value, power, and field strength to override static and interference, both man made and natural.

During the past few years the leading broadcasters have spent millions to improve the quality of their

transmitters; to enable the sounds delivered to the microphone to go out on the air with the full range of frequencies, high and low, which insure naturalness and reality. Only high-quality receivers will respond to this full range of tones, shown in the accompanying diagram. The inadequate and obsolete receivers can reproduce only a few octaves out of all the musical riches which are in the night air, free to everyone for the mere picking up.

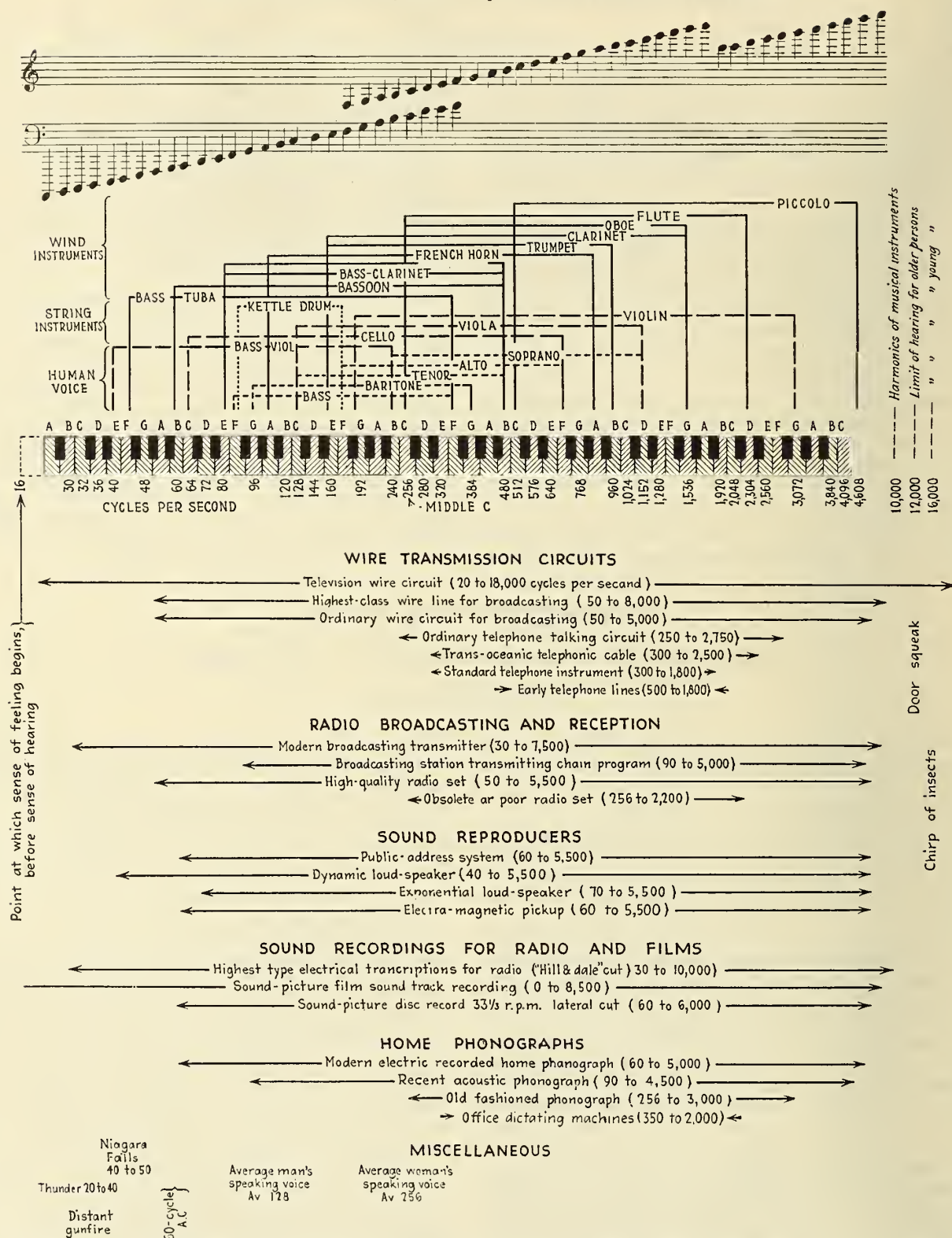
Until recently the radio industry did, to some degree, meet the situation created by falling prices and wavering specifications by "selling up." The time has now arrived, however, when the industry needs help from other directions if it would keep its business on a sound and profitable basis. The dealer particularly needs this outside help because he is all but conquered by the following factors: (1) The public's "low price" complex, (2) its lack of confidence, (3) its inability to judge true tonal and other quality values, (4) the dealer's own inability to demonstrate convincingly the relationship of price to quality.

The time has arrived, therefore, for the industry to set up some standards for the determination and presentation of comparative values. It should not be hard to fix scales of tone fidelity, sensitivity, and selectivity on which each radio set could be rated with some rough attempt at comparative valuation.

We must, in other words, set up a yardstick or set of standards by which radio sets can be simply and clearly rated in terms of performance and tone qual-

¹ Former Federal radio commissioner; now editor of *Electronics and Radio Retailing*.

Electronics' Chart of Sound Frequency Characteristics



ity. This would be analogous to the ways of rating automobiles in performance or horsepower. In the early days of the automobile industry, nothing of this kind was available, and the public was not able to judge the real character or merit of a car. Nowadays all this is standardized, to the benefit of the public,

the automobile manufacturer, and the automobile trade.

Such a plan of rating radios in terms of standards would stabilize this overwrought business of radio by revealing clearly to each buyer just what he is getting for the price he pays.

STANDARDIZING ACTIVITIES OF THE PAN AMERICAN SANITARY BUREAU

By DR. BOLIVAR J. LLOYD, M. D.¹

The Pan American Sanitary Bureau is an international health organization, all-American in character, created in 1902, for the purpose of preventing the spread of communicable diseases in international commerce and of rendering such cooperative assistance to individual American republics as may be mutually agreed upon. By virtue of his election, Surg. Gen. Hugh S. Cumming is the director of the bureau. An office with the necessary scientific and other personnel is maintained in the building of the Pan American Union in Washington, and field workers are detailed for duty to different republics as occasion may require.

Members of the directing council, chosen by the Pan American Conference, of which the bureau is the executive organ, meet in Washington from time to time to aid in determining its policies. Under the auspices of the Pan American Sanitary Bureau the directing heads of the departments of public health of the 21 American republics meet also in Washington once in five years to discuss their manifold problems.

The activities of the Pan American Sanitary Bureau are varied in character, the bureau having been granted broad general powers when it was created and also by the various Pan American Sanitary Conferences held subsequently.

Standardization of sanitary measures is one of the achievements of the many activities of the bureau, but an account of its operations, written solely from the viewpoint of standardization, can give only an inadequate picture of its work. However, it is believed worth while to give a brief account of these standardizing activities.

In cooperation with the Office International d'Hygiene Publique, of Paris, the Pan American Sanitary Bureau maintains a system for the collection and periodic distribution of reports of the presence of plague, cholera, and yellow fever should these diseases exist in any of the countries of the Western Hemisphere, and of smallpox and typhus fever when these diseases exist in epidemic form. All countries affiliated with the bureau are encouraged to submit these reports promptly, together with an account of the measures adopted for the control of the spread of these diseases which should be as nearly uniform in character as individual criterion and local circumstances will permit.

There has been translated, published, and distributed a report prepared by the American Public Health

Association, in cooperation with the United States Public Health Service, embodying the principles of public-health administration as applicable to large and small cities. This publication was issued in the hope of assisting in the standardization of all health activities in cities in so far as this may be feasible or desirable.

Further effort has been made to secure the ratification of the Pan American Sanitary Code, which was prepared by the Seventh Pan American Sanitary Conference at Habana, Cuba, in 1924, with the object of standardizing international quarantine procedures, particularly with regard to vessels. Eighteen American republics to date have ratified this code.

A detailed study of proposed regulations for the prevention of the spread of communicable disease by airplane was made by the bureau and also by the Second Pan American Conference of Directors of Health in joint session with the members of the directing council. The purpose of these regulations, in addition to preventing the spread of disease, is to facilitate international commerce by airplane by adopting uniform measures, embodying a maximum of protection with a minimum of restriction on intercommunication.

A standard milk ordinance which has been adopted by many communities in the United States² was published and distributed to all directors of health of the Latin American republics and to others concerned in an effort to secure a uniformly safe product under reasonable regulation.

Effort is being made to secure international agreements with regard to the production and sale of biologic products.

Concerted effort is being made to standardize procedures for the prevention of the spread of yellow fever from present foci and also to institute measures looking to the final eradication of this disease from the American Continent.

Standard methods for the fumigation of vessels for the destruction of disease-bearing rodents and insects on board have been adopted.

Translation has been made of the report of the work of the United States Public Health Service done in connection with the rat proofing of vessels, and these publications have been suitably distributed in an effort to have these measures universally adopted.

² Standard Milk Ordinance and Code, by Leslie C. Frank, of the U. S. Bureau of Public Health Service, appeared in the December, 1930, issue of COMMERCIAL STANDARDS MONTHLY.

CONFERENCE APPROVES RECOMMENDATION FOR SURGICAL DRESSINGS

Approval of a simplified practice recommendation covering the sizes and descriptions of surgical dressings was given by the general conference of representatives of the trade, held September 28, 1931, in Toronto, Ontario, Canada. This conference was held in conjunction with the annual meeting of the American Hospital Association.

The recommendation provides for 22 sizes of dressings, which were developed from a study made of the problem by the American College of Surgeons, in cooperation with hospitals and manufacturers. They include sponges, abdominal packs, and sterile gauze dressings.

The program will become effective one month after the Bureau of Standards' announcement that sufficient support has been received through the medium of signed acceptances to insure the initial success of the recommendation.

REDUCING COSTS OF OPERATION

Standardized Method of Operation Eliminates Unnecessary Costs

By J. DON ALEXANDER, *President Alexander Industries (Inc.)*

The last two years has been the "open season" on airplane production costs, with manufacturers gunning hot and craftily after every saving they can realize.

Ability to meet competitive price cutting and still maintain the quality of a product calls for the most exacting study of the entire production process. As with most industrial problems the answer usually is capital—capital with which to buy labor-saving machinery; capital for the salaries of expert engineers and veteran craftsmen. As in most business, capital explains why the larger airplane companies may undersell their smaller relations while producing better planes.

But capital without ingenuity is just so much credit at the bank. Since many labor-saving machines are developed during the course of time in the factory itself it requires a number of keen minds casting about for fertile ideas. Their success usually decides whether a new company will make a profit, or join the crowded "bone yard" behind aviation's hangar.

Large turnover is the secret of inexpensive manufacturing. During 1927, 1928, and 1929 the big factories enjoyed a fair rate of production. Since then the market has made it hard to cut costs. Business is being developed by making planes that suit the times. Either faster planes, cruising at 150 to 225 miles per hour, or small "mosquito" planes, inexpensive to buy, easy to fly, and economical to operate. Naturally, the best example of such a plane that I can think of at this minute is the new Alexander "Flyabout," a 2-place cabin plane equipped with lots of wing for quick takeoffs and slow landings, a 35-horsepower air-cooled motor, a top speed of 85 miles per hour, and a landing speed of 20 miles per hour. This type of plane is in demand among private and commercial flyers who want a low-priced sport or training ship that will average 30 miles or more to a gallon of gasoline.

Airplane production will have to grow into five or six figures yearly before the makers can achieve the low unit costs of the automobile industries. Even with the present low output there have been many savings which cut the price to the consumer. Efficient factory planning, modern machinery, and plain hard thinking all have helped slash the price of many planes almost in half within the last four years.

Inexpensive production in the manufacture of any product lies in the duplication of every part so that it is interchangeable with every similar part in each unit. The more duplication the cheaper the composite whole. Every effort is made to achieve this end on present planes. Labor-saving machinery is used wherever practical, but many expensive but valuable machine methods will not pay on the investment until airplane sales mount into the tens of thousands every year.

In order to gain both strength and lightness in an airplane member the engineer has developed structural design to a high degree. In making single units

factory craftsmen must take great pains to insure accuracy without making the parts overweight or underweight.

Such craftsmanship entails costs that can only be cut down by the use of precise machine methods, which have the added advantage of producing a more nearly perfect and interchangeable part.

Let me cite a few instances of machine-made savings in the factory at Colorado Springs, Colo., with which I am more familiar. Before a molder was installed in the wood shop, the handling of spars for a plane required 16 man-hours on the shaper. The front spar was run through the shaper five times and the rear spar three times. Now the front and rear spars are each shaped with a single operation of a motor-driven molder. Under the old process they were approximate in shape, now they are of exact size. They fit more easily into place in the jugged wing skeleton.

Instead of producing one cap strip in five operations as under the old method, five cap strips are now turned out in one operation. Spar and cap strip shaping that formerly required 16 man-hours now takes only 4.

Proceeding to the covering department, where fabric is cut and sewed to the wings, control surfaces, and fuselage, use is made of an electric machine which cuts sufficient cloth at one time to cover 10½ biplane wings. One hundred layers of fabric can be placed on the table and cut to proper pattern in one operation with minimum waste. The various shapes of fabric are so carefully patterned on the sheet that the waste never exceeds 5 yards per 100 planes. Electric machines capable of 3,300 stitches per minute double stitch the fabric.

Covers for wings are sewed into a 1-piece bag, like a pillow slip, pulled over the wing, fuselage, or rudder, etc., and stitched securely in place. Sewing as an envelope does a better covering job and saves many man or woman hours. One machine operator can turn out 32 wing covers every 8-hour day. Sixteen workers can cover parts for eight 3-piece biplanes every eight hours.

An example of a simple yet valuable device which was developed during the first few years of production is the thread-making machine. The raw thread is reeled through a pan of molten wax by an electric motor. A "wiper" regulates the proper coating.

An overhead track system connects all departments. Over it parts are conveyed rapidly from the main plant to the protective oil and dope rooms, which are located some distance away as a fire protection. In the old Denver factory two men used to carry a wing from one building to another and back. Now one man uses less time to transport 12 wings over the trolley system. The trolley also makes it easy to install motors in fuselages wherever they are in the production line.

At one time the workmen spent three hours hand painting a single wing skeleton with protective oil. About 85 per cent of the oil went into the air as waste.

By dipping the wing in a vat of protective oil, two men now process a dozen wings in half an hour.

Jigs are now in almost universal use in large factories. Roughly described, these devices are a simple framework for holding the members of a fuselage or wing into place while being joined together. They speed production and result in exact duplication. They are particularly handy in fuselage welding. The welder selects the correct piece of tubing from its bin in the rack and welds it into position without the filing and fitting often required withunjigged fuselages.

Moreover, a jig is more than a mere framework for the fitting of structures. It should embody requirements familiar to every veteran aircraftsman. It must be so designed that every joint is easily accessible to the welder. The tube must be held in place with little attention from the welder, and the finished fuselage must be easily removable from the jig.

When a new design calls for a large number of identical parts it is economical to make dies for cutting with a punch press. Employment is given to two or three die makers and it is practical to invest thousands of dollars in dies. Two thousand jigs, dies, and fixtures is a low estimate of the number required for manufacturing on a large scale.

Craftsmen are encouraged to work out more efficient methods, cash prizes being offered for the most practical ideas of the month. This little stimulation works wonders.

One element in the cost of airplanes which is rarely considered by the customer is that of research and engineering. It runs into an enormous figure on each new model. A successful manufacturer will try to spread this cost over as many units as possible in order to lower the fly-away price of his plane.

Manufacturers are doing all they can to bring good airplanes within the reach of more buyers, and better planes are appearing every year at lower prices.

PAST YEAR AN ACTIVE ONE FOR BUREAU OF STANDARDS

Annual Report of Bureau of Standards Describes Many Notable Achievements in Science and Technology

One of the most interesting facts brought out in the 1931 annual report of the Director of the Bureau of Standards to the Secretary of Commerce is that present business conditions have brought no reduction in requests for the bureau's services. Apparently far-sighted executives are striving to obtain all essential data concerning their industries, and this should prove a good investment under new conditions of intense competition and smaller margins of profit.

The year has been particularly satisfactory in the matter of international cooperation. The bureau has maintained its close relations with the national laboratories abroad, and progress has been made in the standardization of electrical, temperature and photometric measurements, industrial length measurements, and X rays. The International Committee on Weights and Measures has agreed upon 68° F. as an international standard temperature for making all industrial length measurements; a most important step in the standardization of shop procedure.

The standardization of Lovibond Glasses for color grading of commodities has been continued and 1,696 have now been accepted. Under an arrangement with the American Railway Association the bureau has been made the custodian of the standard color glasses for railroad signals.

Standards have been established for the light fastness of dyed textiles based upon the amount of fading which takes place under definite conditions of exposure. Standard sizes have been agreed upon for knit underwear. These have been set up through the cooperation of all interested groups and will be published as a commercial standard.

A special cotton cloth, which in an emergency can be substituted for silk in making parachutes, was developed in cooperation with the National Advisory Committee for Aeronautics, and has passed the military tests.

A study of vapor lock has shown that most automobile fuel systems are poorly designed and are likely to give trouble in hot weather because of boiling of the gasoline. On the basis of the bureau's findings considerable improvements will be incorporated in the 1932 cars. The standard brake code for motor vehicles is being revised to bring it up to date with the almost universal use of 4-wheel brakes.

One of the most unusual laboratories ever constructed at the bureau has just been completed. It is a square wooden tower 100 feet high, with a water tank on top, and will be used to study the operation of plumbing systems as used in tall buildings.

Street-car efficiency will be increased and noise reduced as the result of a study of gearing and other parts of the driving mechanism, which is being conducted in cooperation with the American Electric Railway Engineering Association.

A report has been prepared which outlines the manufacturing procedure to be followed in the production of chinaware which will resist cutlery marking.

A new process, which may prove of great commercial importance, was worked out for manufacturing sugar acids and their salts. Portions of the semi-commercial plant for the production of levulose were operated with success. Insulating board from corn-stalks is now an accepted article of commerce, but laboratory experiments are being continued to improve the production method and to render the product more resistant to fire and water. The use of the sweetpotato as a source of starch in the southern textile industries is under investigation in cooperation with the Alabama Polytechnical Institute, and the University of Alabama is assisting in a study of the manufacture of kraft paper from southern woods.

The use of specifications by private purchasers is being facilitated by the preparation of lists of willing-to-certify manufacturers and by giving every encouragement to the use of quality-guaranteeing labels.

Twenty new simplified practice recommendations were developed, covering a wide variety of commodities. The total number of recommendations is 149, and the average adherence of the manufacturers reporting is about 90 per cent, as compared with 87 last year. Sixty-two commercial standards projects are now active, 12 having been printed during the year.

In conclusion Director George K. Burgess recommended the adoption of a uniform patent policy by

the Government covering patents on inventions made by Government employees in the line of duty, the bureau having always held that all such inventions belong to the public. He also asked for a new administration building to house the bureau's nonlaboratory facilities and to relieve congestion in other buildings. Additional equipment in the branch laboratories, and particularly that in San Francisco, may be needed to care for testing on the Pacific coast.

SPECIFICATIONS IN GOVERNMENTAL BUYING

Without Definite Specifications Government Purchasing Agencies Resort to Buying on "Brand Name" or Its Equivalent, Which Often Leads to Substitution of Inferior Quality

By RUSSELL FORBES¹

Without standardization, which involves the reduction of the kinds of commodities used by a government to the smallest number consistent with the needs of the using agencies, centralized purchasing falls short of its real function. If each branch of the government is allowed to demand its own particular choice of brand or quality, it is impossible to consolidate requirements into bulk orders. In that case the advantages of price reduction through bulk buying will be lost.

Admittedly, all articles used by a government can not be standardized. Nor can all using agencies be expected to use the same quality of a commodity. One or more departments may require a higher quality or a different style of article than will serve the needs of other departments. But almost any government buys scores of articles which are used in common by the various departments and institutions; among these may be mentioned coal, paper, stationery, furniture, motor equipment, automotive accessories, gasoline, motor oil, and textiles. If the needs of all the using agencies in such staple commodities can be consolidated into bulk orders, the unit prices are likely to be considerably reduced.

Standardization has many other advantages besides price reduction. Better delivery service is likely to be secured on large orders. If the supplier will provide prompt delivery the Government need not carry large stocks on hand, and therefore can reduce the overhead carrying charges. Transfers of stock between departments can be more easily effected if the items of supply are of a standard make or quality.

Within the compass of this article it is impossible to discuss the most acceptable methods of standardization which have been developed in various governments. It should be pointed out, however, that to be successful a standardization program should be based on consultation with the using officials. No purchasing official should be given blanket authority to establish standards according to his own personal beliefs. Standardization, to be satisfactory, must be based on accurate and complete information on the needs of the using agencies and should be made to conform to the

economic rule of the "greatest good to the greatest number."

Ancillary to the adoption of standards is their expression in written specifications. Specifications make real competition possible. If the needs of the government are expressed in clear and unmistakable language the bidder can submit a more intelligent price quotation; the purchaser can make a more accurate comparison of the bids received from various sources to determine which is best; and the inspector can determine whether or not the government is receiving what it ordered.

Without definite written specifications most governments are compelled to ask for prices and to award orders on the basis of trade-marks, by citing a well-known brand "or its equivalent." Quite naturally, indefinite language of this sort often leads to substitution of inferior quality and to litigation over disputes on deliveries. Wherever possible, written specifications should be prepared, including definite quality and performance tests as the basis for acceptance and payment of the delivery.

The preparation of specifications is a technical task requiring the combined services of the engineer, the chemist, the lawyer, the buyer, and the user. Consultation with the seller, too, is frequently helpful, especially in determining whether the proposed specification is practicable from the producer's standpoint. The specification should not be too drastic and rigid, lest it increase the cost by interfering with normal production methods.

Abundant proof of the advantages of standardization is found in the experience of many governments—Federal, State, and local. By reducing the varieties and increasing the volume, the State purchasing office of Maryland has been able to secure the lowest possible prices. Under decentralized purchasing in Maryland, 17 different brands of toilet soap and 15 different brands of scrubbing soap were used by the various State departments and institutions, so diverse was their individual preferment. Through standardization, the purchases of the State are now limited to three kinds of toilet soap and two kinds of scrubbing soap.

New standardization projects are initiated from time to time in Maryland. Recently a conference between the purchasing agent, the heads of the different State

¹ Secretary, National Municipal League; director, Municipal Administration Service; associate professor of government, New York University; and consultant on governmental purchasing of the National Association of Purchasing Agents.

institutions, and representatives of the manufacturers resulted in the reduction of the different kinds of mattresses used by the State from 8 to 4 and of pillows from 8 to 3 different kinds. Specifications have been prepared so that in the future all manufacturers will be able to bid on the same articles and will not be required to submit samples with their bids.

Before the purchasing department was established for the city of Los Angeles, the individual departments paid from 75 cents to \$1 each for high quality typewriter ribbons. By standardizing on one grade, and by contracting for a 6-month supply, the price was reduced to \$4 per dozen. By the adoption of standard specifications and by broadening the field of competition, the city now pays \$2.41 per dozen for precisely the same grade of ribbon which previously cost \$4 per dozen.

In Detroit, prior to 1918, approximately 80 different types of oils and greases were used by the city government. As a result of careful chemical tests, the number of types used was reduced to 10, and definite specifications were prepared to describe the standards. It is estimated that the city saves \$25,000 per year through the standardization of this commodity.

The city of Milwaukee has gone a long way in standardization of its matériel requirements. Re-

cently the city purchasing agent prepared specifications for the purchase of fireworks for the annual Fourth of July celebration. These specifications, believed to be the first of their kind, enabled the city to compel suppliers to furnish what was ordered. Another progressive step in Milwaukee was the recent adoption of specifications covering the removal of metals sold by the city to scrap dealers. The new requirements are believed to give a most accurate check on the buyer and to insure the city's receiving full payment for the scrap sold.

In Cincinnati, too, standardization is progressing steadily. In 1929, a total of 92 new specifications were prepared, tried out, and finally adopted for city use. One of these covered surgical soap. By a 6-month contract and the use of the new specification the competition was widened and the price was reduced from 9.25 to 7.85 cents per pound. The standard specifications for chipped soap brought a reduction of 17 cents per hundred pounds over the 1928 price, in the face of a rising market. During 1928 the city paid \$3.49 per hundred pounds for soap powder of a certain trade brand. After the adoption of the standard specification the same powder was purchased without trade label for \$2.74 per pound.

PUBLICATIONS

Circular on reclaimed rubber.—Circular No. 393 on reclaimed rubber has just been issued by the Bureau of Standards, and will be found of value to all those interested in the utilization of waste products. While reclaimed rubber is not equal to new rubber in strength, stretch, and resistance to abrasion, it may be used successfully for many products in which softness and flexibility are important.

In manufacturing operations reclaimed rubber can be processed more readily and at less cost than crude rubber, but present reclaiming processes are not so well adapted to small-scale operations as are direct means of utilizing discarded rubber products. As is to be expected, the consumption of reclaimed rubber fluctuates with the price of crude rubber, being high when the price is high and at a minimum when the price is low.

Copies of this circular may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 10 cents each.

Staple seats for water-closet bowls.—The printed pamphlet entitled "Staple Seats for Water-Closet Bowls, CS 29-31" has been released and was distributed on October 1, 1931, to acceptors of record and others interested.

The standard as established by the industry recommends definite specifications for nomenclature, type, shapes, materials, construction, dimensions, colors, and finishes of staple seats, and covers, types, and weights of hinges, as well as the wording of labels and guarantees.

Important recommendations included in the commercial standard are as follows:

Seats shall be classified according to finish as: Varnished, sprayed (white or colored), sheet covered, hard rubber, and molded composition seats.

The types shall be designated as staple ring seat, staple open-front seat, and staple open front and back seat, all with or without cover.

The shape of plain rim, staple ring seats shall be designated as for staple bowls. Semi and full saddle patterns shall be considered as special. Shapes of open front or open front and back seats shall be designated as for staple bowls (round front) for staple extended lip and staple elongated bowls.

Types and finishes above the minimum requirements not specifically mentioned shall be considered as special and may be so labeled.

The standard further includes a list of the official acceptors, a condensed report of the general conference, and the membership of the representative standing committee of manufacturers, distributors, and users appointed to review suggestions and effect a revision of the standard when necessary to keep it abreast with progress in the industry.

The chief aims of the industry in the voluntary establishment of this commercial standard are to improve conditions in the industry by providing an authoritative basis for determining and checking the quality of its product, and to protect the purchaser against fraudulent practices by unscrupulous producers and distributors.

The commercial standard became effective for new production, and clearance of existing stocks on October 1, 1931.

STANDARDIZATION BRIEFS

Turkey adopts metric system.—Following the example of Persia, the Turkish National Assembly has resolved to enact a law to enforce the metric system as of January 1, 1933.

Standardization in housekeeping.—The Association of Norwegian Engineers, Association of Norwegian Architects, and the Norwegian Association of Housekeepers have organized a committee for the purpose of carrying out standardization of all kitchen equipment. The plan of these associations is to include suggestions for proper kitchen designs as well as proposals for standardized cupboards, tables, etc.

Antiaircraft equipment standardized.—During the past several years antiaircraft exercises were conducted at Aberdeen Proving Grounds, Md., for the purpose of testing newly designed antiaircraft equipment. As a result of these annual exercises, which were conducted under the joint supervision of the Chief of Ordnance and the Chief of Coast Artillery, practically all items of equipment necessary for an antiaircraft regiment have been standardized, with the exception of the height finder.

Standard apple and pear containers.—An Argentine decree, officially published October 6, 1931, requires the use of units of the metric system in marking weights and measures on standard apple and pear containers, according to a cable, dated October 9, received by the Department of Commerce. This decree amplifies the previous requirement that fruit containers bear an indication of the nature of the contents, class or variety, net weight or number of units, the name and address of the producer, and the country of origin.

Use of "marked" lumber increases.—In reply to a follow-up inquiry of the National Lumber Manufacturers Association for the prevailing attitude of dealers in New Jersey toward grade and trade-marked lumber following an intensive campaign in 1930 by the association to stock marked lumber, the secretary of the New Jersey Lumbermen's Association says: "Our members are becoming increasingly interested in backing grade-marked and trade-marked lumber. As you perhaps know, we have worked on the State purchasing department in New Jersey, and have finally succeeded in getting them to specify grade-marked lumber as one of the qualifications in furnish- ing estimates on their requirements."

Oil storage tanks.—The American Oil Burner Association (Inc.) has requested the cooperation of the Bureau of Standards in the establishment of a commercial standard to cover specifications for fuel oil storage tanks.

It is expected that this specification will cover the character of material from which the tanks are made, thickness, method of jointing, standard sizes, open-

ings, coating, labeling, and possibly other details of general interest to the producers and users.

Textile standards to reduce costs.—To reduce the manufacturing costs, and to simplify production in the textile industry, the Czechoslovak Ministry of Commerce has developed a program which will reduce the number of and standardize fabrics of the textile industry which are to be used for Government purposes. The standardized quality samples of the individual fabrics will then be put at the disposal, by the various Government offices, of all technical bodies, parties interested in the production, and trade circles for submission of their bids.

Federal grades specify dressed-turkey styles.—What the well-dressed Thanksgiving or Christmas turkey will wear this year as it comes from the market ready for final preparation in the kitchen is indicated in the schedule of Tentative United States Standards and Grades for Dressed Turkeys, a style sheet which the Bureau of Agricultural Economics has issued to guide the work of the Federal turkey graders this fall. These turkey graders are the men who are authorized to affix grade tags to the birds. The four grades are: U. S. Special, U. S. Prime, U. S. Choice, and U. S. Commercial. The birds are also classified as young or old turkeys.

Electrical supply apparatus.—A specification of interest to manufacturers and users of battery eliminators, trickle chargers, mains-operated radio sets and radio gramophones has recently been issued by the British Engineering Standards Association. This specification applies to devices intended for supplying current at voltages not exceeding 500 volts to apparatus employing thermionic tubes for radio or acoustic reproduction, etc., where the power is derived from alternating-current mains. The specification, after explaining its scope, gives definitions, and deals with electrical characteristics, markings, design and construction, flexible cords and cables, the measurement of "hum" and the definition of quality. The question of voltage regulation is also dealt with.

Air screw hubs.—The British Engineering Standards Association has issued a revision of its specification dealing with air screw hubs. The new publication is divided into two parts. Part 1 deals only with the fixing of the air screw to the hub and part 2 contains recommendations for the standard engine flange fixings for air screw hubs, rendered necessary by the rapid development of detachable bladed air screws, metal air screws, and gear-box transmission to the multiple-air screw machines. It is recognized that air screws are not required to be interchangeable between existing types of aircraft engines, and that each new design of engine has its own particular type of hub. At the same time it is felt that there is a need for information regarding the basis for the design of these fittings.

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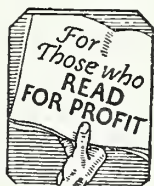
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This new governmental periodical is a review of progress in commercial simplification and standardization. It is the only journal of its kind. It covers the national movement initiated by President Hoover for the reduction of needless sizes and varieties of products and the promotion of voluntary commercial standardization by industry.

The Secretary of Commerce in the first issue of this new journal said: "Certain standards, such as those used for weights and measures, * * * have been fixed by legislative enactment. Mandatory standards of this character, however, are few in number when compared with the large and steadily growing volume of standards developed by industry and commerce and voluntarily maintained. * * * The activities of the Commercial Standardization Group of the Bureau of Standards are concerned with standards adopted by voluntary agreement."

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R. P. LAMONT, Secretary of Commerce

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—President Hoover, at the laying of the corner stone of the new building of the U. S. Department of Commerce, June 10, 1929.



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BUREAU OF MINES—Continued.

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STEAMBOAT INSPECTION SERVICE, DICKERSON N. HOOVER, Supervising Inspector General.

The inspection of merchant vessels, including boilers, hulls, and life-saving equipment, licensing of officers of vessels, certification of able seamen and lifeboat men, and the investigation of violations of steamboat inspection laws.

UNITED STATES PATENT OFFICE, THOMAS E. ROBERTSON, Commissioner.

The granting of patents and the registration of trade-marks, prints, and labels after technical examination and judicial proceedings.

Maintenance of library with public search room, containing copies of foreign and United States patents, and trade-marks. Recording bills of sale, assignments, etc., relating to patents and trade-marks. Furnishing copies of records pertaining to patents. Publication of the weekly Official Gazette, showing the patents and trade-marks issued.

RADIO DIVISION, W. D. TERRELL, Chief.

Inspection of radio stations on ships; inspection of radio stations on shore, including broadcasting stations; licensing radio operators; assigning station call letters; enforcing the terms of the International Radiotelegraphic Convention; and examining and settling international radio accounts.